RULES AND SPECIFICATIONS

For Excavation Activity Within The City Of Boston

City of Boston

PUBLIC WORKS DEPARTMENT

PRELUDE

Public Utility Companies and Private Contractors who open and occupy the public way throughout the City of Boston must act responsibly responding to the residents, local businesses, and travelers who depend upon the use of these public ways in the course of their daily lives. Improper backfilling, poor patching, careless plating, unsightly debris remaining from completed projects, and excavations into newly resurfaced streets project to the public an image of indifference and wasteful spending.

As the municipal agency responsible for the maintenance and safety of the public right of way in City of Boston it is the duty of the Public Works Department to protect the interests of the public we serve. The Boston Public Works Department sets forth the following Rules and Regulations as a mandatory requirement for the issuance of a Public Works Department permit to open or occupy a public way.

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RULES AND SPECIFICATIONS FOR STREET OPENINGS

SECTION 1.00

INTENT AND PURPOSE

Sec. 1.01 Intent and Purpose

A. The public right-of-way in the City of Boston is a fixed limited resource with a statutory obligation that needs to be managed to maximize the preservation of essential services to the inhabitants of the City of Boston, Massachusetts. These Rules and Specifications, specifically Section 9, Chapter 21 of the Revised Ordinances of 1961 or the latest revision thereof (Chapter 5, Ordinance 11, Paragraph 158) Title II of 1975, supplement the General Ordinances of the City of Boston, Governing Roadways and Right of Way within the city limits.

B. The City of Boston experiences demand for its public right-of-way from the public, municipal servers, utility providers, and other services to the public. This demand shall be properly managed through the BPWD Pavement and Permit Management Systems and enforced by the BPWD Construction Inspection Unit (CIU) under the provisions of these Rules and Specifications.

C. The Boston Public Works Department has incurred, and is expected to continue incurring substantial capital and maintenance costs, as well as other expenses, to meet the needs of the public in managing its right-of-ways. As a partner with the utility company, the BPWD shall not seek any additional services or fees outside those justified to protect the current and remaining life of the affected public right-of-ways.

D. These Rules and Specifications have been enacted by the BPWD to regulate the use of public right-of-ways in the interest of public safety and convenience, and to operate and protect the BPWD infrastructure. Excavation and restoration standards are required to preserve the integrity, operational safety, and function of the public right-of-way.

E. The Public Works Department in the City of Boston is granted the authority to administer and enforce the requirements of these Rules and Specifications. BPWD personnel shall have the right to require such actions as necessary to enforce adherence and compliance to these Rules and Specifications. Note that most excavations into the right-of-way occur within municipal streets, however, references to "streets" in these Rules shall be applicable to all street right-of-ways.

F. In order to coordinate construction inspection, the Permittee is required to call the BPWD at (617) 635-4950 at least 24 hours in advance for **any *start of work, backfilling, or paving operations.*** The Permittee shall also call the BPWD when all work is complete and ready for final inspection. The following information should be provided during the phone call:

1. Permit Number
2. Location
3. Type of Activity
4. Date and Time of the Activity
5. Foreman name and phone number

Failure to call BPWD with this information shall result in suspension of the Permit and project. The Permittee shall then be required to arrange a meeting with the Department to discuss any future work.

G. These Rules and Specifications are intended to provide a mechanism to assure that all excavation activities are performed consistently. The BPWD maintenance of utility trenches that are no longer under a guarantee shall be exempt from these Rules and Specifications. All work not referenced herein pertaining to street excavations and repairs are required to be in compliance with Massachusetts Highway Department Standards.

Sec. 1.01 Intent and Purpose (Con't)

H. It is the intent of the BPWD to ensure quality performance by all permitted users and to promote cooperation among all users of the public right-of-way. To minimize disruption of public places, the BPWD strongly encourages the use of trenchless technologies instead of open trench excavation whenever possible. It should be noted that applicable permit expenses could be substantially reduced if open trench excavation into paved areas is avoided.

I. The BPWD strongly discourages excavation in newly constructed, reconstructed, rehabilitated or resurfaced streets. The current Guaranteed Protected Street List showing newly constructed, reconstructed, rehabilitated, and resurfaced streets shall be available at the Permit Branch located in Boston City Hall. BPWD's future capital roadway repair program will be available though the City's Utility Coordinator.

Whenever the BPWD has developed plans to construct, reconstruct, rehabilitate, or resurface a street, the BPWD Utility Coordinator, or its representative, shall give written notice through local newspapers to all abutting property owners. The BPWD shall provide a separate written notice addressed to all City of Boston departments, and to all public utilities, which have or may wish to lay pipes, wires, or other facilities in or under the street. Upon receipt of such written notice, such person or utility shall have (60) sixty days in which to repair, install or lay any facility in the specified locations.

J. Should utility service connections require more time, the BPWD requires notification in writing outlining the amount of time required to finish the work along with a detailed explanation as to why an extension should be granted. No extension granted by the BPWD shall exceed one year from the original date of notification. Thereafter the BPWD shall have the right to **deny permit applications** for excavations not specifically contained within each utility's respective planned work programs, with the exception of emergency work.

K. Locations identified as conflicts to BPWD roadway repair programs are to be completed within the following timeframe from time of notification:

1.	Repairs to Existing Facilities	60 days maximum
2.	Service Connections	6 months maximum
3.	New Installations	1 year maximum

L. Locations identified as "cleared" by a Utility, are expected to have been investigated of material, age and found to be highly reliable, showing little to no signs of failure and/or frequent emergencies. The City considers the **"clearing"** of a street as a **"sign off"** and assumes no frequent maintenance work will be required for the following BPWD repair activities and time frame:

1.	Resurfacing	**5 years minimum**
2.	Reconstruction (Full Depth 4" Minimum)	**10 years minimum**

The BPWD expects the Utility to provide the age, pipe size, material type and history of maintenance repairs when requested by BPWD. Should the City find utilities neglecting underground facilities resulting in repetitive public user delays, the City will recommend that the utilities explore improving their infrastructure.

Sec. 1.01 Intent and Purpose (Con't)

M. All private and public utilities, agencies, or parties excavating streets in the City of Boston right-of-way are required to attend monthly Utility Coordination meetings thorough its Utility Coordinator, or representative, held at City Hall to discuss and coordinate current/future excavations.

N. In addition to monthly meeting attendance, the City of Boston has developed an in-house tool that will facilitate cooperation between the utilities making coordination easier and more efficient. That tool, COBUCS (The City of Boston Utility Coordination Software), is a live database that leverages the latest internet-based data exchange technologies to allow a smooth and orderly synchronization of roadway impact between City agencies and utility companies that operate within its borders. Utilities will be required to log into a secure database connection to update project status on a regular basis.

   This database, tied into a table containing the location of every intersection on every street in the City, shall easily discern where multiple jobs overlap geographically and chronologically. This can only occur when every agency utilizes the same database with a consistent and standard application. The Public Works Department's station node database relies on immutable standards and interfaces naturally with PWD's GIS centerline.

O. Nothing in the Telecommunications Act of 1996 affects the authority of a State or Local government to manage the public right-of-way, or to require fair and reasonable compensation from telecommunications providers on a competitively neutral and nondiscriminatory basis if the compensation required is publicly disclosed by such government.

P. **The BPWD reserves the right to waive, alter or update these Rules and Specifications as needed in order to ensure that the interests of the City of Boston are being sufficiently met.**

SECTION 2.00

DEFINITIONS

Sec. 2.01 Definitions

For the purpose of understanding the Rules and Specifications, all words shall have their standard meanings. These words are more particularly defined as follows:

AAB shall be defined as the Architectural Access Board, a regulatory agency within the Massachusetts Office of Public Safety. Its legislative mandate states that it shall develop and enforce regulations designed to make public buildings accessible to, as well as functional and safe for use by persons with disabilities.

ADA shall be defined as the Americans with Disabilities Act and all the requirements set forth therein.

Arterial Street shall be defined as a primary street that may be functionally classified under the Federal-Aid Classification System (Fed-Aid) or National Highway System (NHS), as facilitating the movement of the highest traffic volumes in the City of Boston. Major and Minor Arterial streets are a sub-classification to better define the estimated traffic use of the facility.

Backfill shall mean the placement of specified material in all spaces excavated and not occupied by substructures, and the bedding up to the elevation of the bottom of the pavement structure, or other surface material.

Boston Public Works Department (BPWD) shall mean the City of Boston, and/or it's Public Works Department, or their designated agent.

Bonded Contractor shall mean the person(s) or utilities that have met the insurance requirement of all applying Permittees before the issuance of any Permit. Bond forms are on file at the BPWD Permit Branch Office.

Boston Transportation Department (BTD) shall mean the City of Boston's Department responsible for the safe passage of vehicular traffic through the public ways in the City of Boston, traffic rules, restrictions, regulations, signals, appurtenances, and street signage within the public right of way.

COBUCS shall mean the City of Boston's Utility Coordination Software tool developed by the City of Boston to effectively manage the construction within the City of Boston, eliminating potential conflicts through the sharing of information over a secure server.

CIU shall mean the BPWD Highway Department's Construction Inspection Unit. This unit is responsible for enforcing these Rules and Specification.

Collector Street shall mean a secondary classification facility to the arterial in which the next heaviest traffic volume streets may be classified under the Fed-Aid or NHS system. Collector streets serve as feeder routes from residential streets to arterial streets, or travel between arterial streets.

Compaction shall mean the act of firmly packing together construction material to ensure stability of substructures, bedding materials, backfill/base gravels, and surface materials.

Dig Safe shall mean the current existing underground facility damage prevention system established by Massachusetts State statute, the American Public Works Department Association, and the Utilities Location and Coordination Council to provide for safe underground excavation.

Distortion shall mean localized pavement surface areas having elevations lower or higher than those of the surrounding pavement.

Sec. 2.01 Definitions (Con't)

Driveway shall mean the portion of a street from the private property line to the curb, including the curbing and/or lack there of, to the improved or traveled section of street. This area is used to provide vehicular access, parking, and/or storage from the private property to the curb, or to the improved or traveled section of street.

Emergency shall mean any event which may threaten public health or safety, including but not limited to: damaged or leaking water or gas conduit systems; damaged, plugged or leaking sewer or storm drain conduit systems; damaged underground electrical and communications facilities; or downed overhead pole structures. Emergency permits are only valid for a 24-hour period, unless otherwise specified.

Encroach shall mean:

1. The placing, depositing, or parking of any ladder, staging, scaffolding, rigging, tower, fence, wall, material, equipment, machinery, dumpster, container, refuse, debris or any other such object, article or thing used in connection with, or arising out of, any building, construction, reconstruction, remodeling, repair, excavation, demolition or other like work. Encroach shall also include the placing, depositing, or parking of any trailer, truck or like vehicle adjacent to or in close proximity to aforementioned work, and which is being so used for such purposes.

2. An intrusion or use caused by the draining or pumping of water in any manner which may in any way obstruct, impede, or endanger public use or travel, or could cause any icy condition which in any way may obstruct, impede or endanger public use or travel or the City of Boston drainage system.

3. The placing of any booth, stall, stand, display, goods or merchandise for sale, vending machine, billboard, sign, advertising instrument or apparatus, or any other such object, article or thing;

4. The placing or erecting of any shed building, tower, pole, pole line, pipe, wall, fence or any other such structure or object.

5. The placing of steel plates not properly fastened, not properly ramped, or not properly recessed and fastened.

Excavation shall mean any action of digging up, drilling, auguring, tunneling, milling, reclaiming, or cable and pipe driving. Excavation does not involve the tilling of soil, gardening, or displacement of earth, rock or other material for agricultural purposes, nor the installation or maintenance of signs performed by the BPWD or the MHD. This term includes the establishment, construction, resurfacing, repaving or reconstruction of any sidewalk and/or driveway approach, or the placing of any substructure.

Facility shall mean any pipe, pipeline, tube, main, service, trap, vent, vault, manhole, meter, gauge, regulator, valve, conduit, wire tower, antenna or ancillary equipment, pole, pole line, anchor, cable, pay phone, junction box, or any other material, structure, or object of any kind or character, whether enumerated herein or not, which is or may be lawfully constructed, left, placed or maintained in, upon, along, across, under, or over any public place.

Guaranteed Street shall mean any resurfaced or rehabilitated street that has been resurfaced or rehabilitated within the past **(5) Five years.**

Guaranteed Sidewalk shall mean any constructed, reconstructed or rehabilitated sidewalk that has been constructed or rehabilitated within the past **(5) Five years**.

Jackie's Law shall refer to the Commonwealth of Massachusetts General Law Title XIV: Chapter 82A Excavation and Trench Safety. See Appendix F.

Licensed Contractor shall mean the Permittee is currently a qualified, licensed and bonded Contractor in the State of Massachusetts.

Sec. 2.01 Definitions (Con't)

Major Excavation shall mean placement, repair or replacement of any main utility line; placement, repair, or replacement of the majority of utility service lines on any street; any excavation project of a minimum (100) one hundred feet in length or a (400) four hundred square foot area; or any project complex enough to be deemed "major" by BPWD.

MHD shall mean the Massachusetts Highway Department.

Modified Winter Patching Material shall mean a mixture of modified asphalt binder material and mineral aggregates used to temporarily repair winter excavations, which shall meet the technical specifications in Appendix A.

Moratorium shall mean the restrictive delay period from November 15th through April 15th

New Street See *Guaranteed Street*

Obstruction shall mean an adverse impact to the right-of-way on the citizens of the City of Boston or others who are required to alter travel routes and times resulting from right-of-way disruptions or encroachments. See *Encroach*.

Patch shall mean an area normally excavated to accommodate a substructure, its appropriate bedding material, backfill, and subsequent pavement structure. Patch area is less than (400 SF) four hundred square feet.

Paved Area shall mean any area with a paved surface consisting of material such as: hot-mixed asphalt, concrete, brick, cobblestone, or granite pavers. These areas are typically referred to as streets, driveways, alleys, sidewalks, footways, walkways or steps.

Pavement Structure shall mean a utility patch founded on approved backfill material comprising of a surface course and intermediate course of hot-mixed asphalt (HMA) material, Portland cement concrete, or block/brick materials founded on a dense, granular, or other approved base material. BPWD defines the interface between the bottom of the Pavement Structure and the top of the backfill material to reside at (12") twelve inches below the bottom of the hot-mixed asphalt material.

Pedestrian Ramp (Wheelchair Ramp) shall mean a curb cut area that acts as a transition from the roadway to a sidewalk. The purpose of this transition is for ease of access to the sidewalk from the roadway for the use of pedestrian traffic. The City of Boston's "Pedestrian Ramp" and the Massachusetts Highway "Wheelchair Ramp" shall have the same denotation. Pedestrian ramps must adhere to AAB standards, and are held to the Massachusetts Highway specifications as outlined by Appendix E.

Permanent Pavement Restoration shall mean the restoration of pavement disturbed by excavation activity to a condition that meets or exceeds the BPWD's Rules and Specifications, and can reasonably be expected to remain in good condition for at least the remainder of the street's existing pavement life before rehabilitation.

Permittee shall mean any person who has obtained a permit as required by BPWD and these Rules & Specifications.

Person shall mean any individual, firm, company, association, corporation, trust or government authority, partnership, public or private corporation, authority or utility, trust, estate, governmental entity, agency or political subdivision of the BPWD, the State of Massachusetts, the United States, or any other legal entity, or their legal representative, agent, or assign excluding the BPWD. Any gender specific term or phrase includes all genders, and the singular tense shall include the plural where indicated by the context.

Pole Placement shall mean an excavation associated solely with a single placement or replacement of a utility pole.

Sec. 2.01 Definitions (Con't)

Private Utilities shall mean any utilities installed within the public way for the exclusive use of the abutters (i.e. telecommunication conduit, steam lines, oil lines, etc.).

Private Way shall mean a way specified by the local public authorities for the accommodation of individuals, and wholly or chiefly at their expense but not restricted to their exclusive use, and subject to the public easement of passage.

Public ground is any ground, land or premises leased, maintained, or in the possession or control of the City of Boston.

Public place shall mean any public street, way, place, alley, sidewalk, park, square, plaza, or any other similar public property owned or controlled by the City of Boston, and dedicated to public use.

Public Right-of-Way shall mean the area on, below, or above present streets and sidewalks, alleys, avenues, roads, boulevards, curbs, gutters, shoulders, or public easements, or any parking lot maintained by or in the possession or control of the City of Boston, or other public lands including easements dedicated for City of Boston use, or the assignment of use in parcels by the City of Boston, but not including the airwaves above.

Public Safety an act that endangers the life or safety of the citizenry, and/or severe damage to property.

Public Utility shall mean any public service company incorporated under the provisions of the General Statutes or by Special Act for the purpose of transmitting or distributing gas, water, electricity, telephone, cable television or telecommunications.

Recycled and Re-used Gravel shall mean any material removed from an excavated jobsite that, after being tested by a professional Engineer certifying that the gravel adheres to MHD M1.03.1 standard and approved by the City of Boston prior to use, may be used as proper backfilling material. Recycled Gravel is more specifically defined in Section 5.03(B).

Rehabilitation shall mean the activity of work on any street, which provides structural improvement having a minimum service life of 15 years with minor maintenance, which includes pavement overlay of (1½") one-and-one-half inches minimum depth, mill/overlay of (1½") one-and-one-half inches minimum of HMA, reclamation followed by HMA placement, and partial or full-depth reconstruction,

Residential Street shall mean all City of Boston streets not classified as Arterial or Collector per Federal-Aid or NHS classification systems.

Rideability shall mean the effect of street pavement conditions on vehicular traffic. Acceptable rideability is typically achieved from pavement surfaces that are smooth, dense, and uniform. Pavement restorations that do not exhibit the failed conditions, detailed in Section 5.02, shall typically be considered to have acceptable rideability. A patch should perform over time equal to that of the adjacent permanent pavement within the same street.

Security shall mean a bond or cash deposit submitted to the BPWD to assure timely and proper completion of required work.

Sidewalk shall mean any public area within a City of Boston right-of-way (including driveways) that is available to pedestrian traffic. *Special sidewalks using materials other than those approved for common use by the City are the responsibility of the property owner as outlined in the License agreement held with the Public Improvement Commission, a division of the BPWD.

Sec. 2.01 Definitions (Con't)

Sidewalk Areaway shall be defined as the subdivision of a privately owned building structure that extends into the public way, often utilized as storage space by the building owners. All repairs to the sidewalk, which serves as the roof to these areaways, are the sole responsibility of the property owner.

Street shall mean any public or private area (generally paved) within a City of Boston right-of-way that is available to vehicular traffic.

Substructure shall mean any pipe, conduit, duct, tunnel, manhole, vault, buried cable, wire, utility system appurtenance, or any other similar structures located below the surface of any public place.
Temporary Pavement Repair shall mean the replacement of excavated pavement in accordance with Section 5.01 utilizing (3") three inches of MHD Type I Top or MHD 9.5mm Superpave hot-mixed asphalt.

Travel Way shall mean the entire portion of a street between curb lines intended for motor vehicle use, or if there is not a curb line the improved or traveled section of a street, including shoulders, intended for motor vehicle use.

Trench shall mean an area normally excavated to accommodate a substructure, its appropriate bedding material, backfill, and subsequent pavement structure. Trench area is greater than or equal to (400 SF) four hundred square feet.

Utility shall mean any corporation, City, or other governmental subdivision, partnership, organization, or any individual or persons engaged within the Commonwealth in any business that is in any respect made subject to the supervision or regulation by the Department of Telecommunications and Energy. For the purposes of these Rules and Specifications, a Utility shall also mean any person or entity engaged by, or on behalf of, a Utility to perform street opening work.

Utility Coordinator shall act as a the representative to the Commissioner of the Boston Public Works Department, facilitating coordination between the City of Boston and the utility companies and quasi-agencies (i.e. Boston Water & Sewer Commission, Massachusetts Bay Transit Authority, Boston Redevelopment Authority, etc) operating within city limits, utilizing the Boston Public Works Department capital roadway, sidewalk, and other right-of-way improvement programs. The Utility Coordinator shall resolve conflicting utility works, and defer such work to be done later as priority dictates. It is the responsibility of the Utility Coordinator to hold monthly meetings with all major utility companies, state agencies, and fellow City departments that excavate into the public way. This process is done in order to make each agency aware of the City's proposed schedule so as to avoid conflicting work being performed in the same period and to prioritize said schedules by the utilities and other agencies with the city in an attempt to eliminate conflict. The Utility Coordinator shall also be responsible for the overseeing of COBUCS and affiliated system.

SECTION 3.00

PERMIT REQUIREMENTS

Sec. 3.01 Activities Requiring Permit

Work typically requiring a permit shall include, but shall not be limited to the installation of utilities, driveways, curbing, or sidewalks; excavation or filling for grading purposes; encroachment in a street or public property; obstruction of a street or drain, or any other modification which could either damage BPWD's infrastructure, or conflict with existing or planned utility infrastructure locations.

Sec. 3.02 Bond Requirements

Before any person, utility, corporation, or company is granted a permit to occupy or excavate a public way in Boston they must first submit a bond in an amount determined by the Commissioner of Public Works. Bond forms and information regarding the bond process is available in the BPWD permit branch.

A person making application for a trench excavation permit shall produce a certificate of insurance with general liability coverage of $1,000,000 per each occurrence, and $2,000,000 in general aggregate.

Sec. 3.03 Indemnification

The Permittee agrees, as a condition governing the issuance of a permit, that they shall hold harmless the City of Boston, the Commissioner of Public Works and his agents and employees from any and all claims and actions whatsoever arising from the execution of said permit.

Sec. 3.04 Penalty

Any permit issued by the BPWD is revocable immediately upon written notification to the Permittee. Any person, firm, or corporation who violates any of the regulations of this manual shall be guilty of a misdemeanor, and upon conviction thereof shall be fined not less than $200.00. A violation shall be issued for each day a worksite remains in violation and is subject to a fine of not less than $200.00 for each issued offense. If the work or any part thereof mentioned in the permit is unskillfully or improperly done, the BPWD shall make any necessary repairs and shall keep an account of the expense thereof. The Permittee responsible for said work shall pay the BPWD an amount equal to the whole of said expense incurred by the BPWD with an additional amount of (15%) fifteen percent to cover indirect costs.

Thereafter, upon completion of the work and the determination of the costs thereof, the City shall issue no further permits to any person or utility until it receives payment of said costs.

Any person or utility that continues to violate any regulation of this manual shall receive no future permits until such a time as the BPWD is satisfied that the person or utility shall comply with the terms of these Rules and Specifications.

Sec. 3.05 Fees

The BPWD shall levy charges and fees as determined by the City of Boston.

The permanent pavement restoration fee shall be assessed based upon the entire area requiring permanent repair work.

Permanent repairs for openings covered by any permit shall be paid for on the basis of rates established by the Commissioner of Public Works in accordance with the provisions of Section 9, Chapter 21, of the Revised Ordinances of 1961 or the latest revision thereof, and Chapter 5, Ordinance 11, Paragraph 158, Title II of 1975.

The cost of all incidental items such as tack coat, crack seal, lane markings, towing, police details, etc. utilized in the making of repairs is the sole responsibility of the Permittee.

The BPWD has established a list of streets **Resurfaced or Reconstructed** within the preceding **(5) Five years,** (Guaranteed Street List). Permittees shall be responsible for curb-to-curb cold planning, resurfacing, and all applicable items necessary to repair these Guaranteed Streets. The limits of repair shall be no less than the length of the trench, and no greater than the original construction, unless otherwise stipulated within these Rules and Specifications.

Sec. 3.06 Billing Procedures

Upon completion of temporary restoration work, the BPWD shall complete the permanent restoration in which a measurement of the actual size of the street opening shall be made by the BPWD. The Permittee shall be billed for all additional work on any actual quantity of work that exceeds the estimated quantity of work reported at the time of the permit application. Any fees collected at the time of permit application, which may exceed the assessment determined by final measurements, may be credited or refunded to the applicant. A credit or refund may also result from mutually agreed upon extensions of paved area restoration.

Sec. 3.07 BPWD Permit Application

A. No permit shall be issued, unless a current application form provided by the BPWD has been completed, submitted to, and approved by the BPWD. All Applications require at least (5) five business days for approval. The written application shall include a minimum of the following:

1. Name, address, and telephone number of the (a) applicant (note: For all major excavation projects the applicant shall be required to provide a viable means of contact, accessible (24) twenty-four hours a day); (b) person for whom the work or activity is being done; and (c) owner of the private premises affected. If the applicant is not the person doing the actual excavation or encroachment work, the applicant must give to the BPWD in writing, at least three full working days prior to the starting of any such work, the name, address and telephone number of the person responsible for said work.

2. Date when the request was made.

3. Name and location by nearest street address, number, or proximity to intersecting street, of the public place to be excavated.

4. Beginning and ending date of proposed work, including anticipated date of any and all paving restoration.

5. Purpose, scope, and limits of work to be done, including a diagram showing the location of the work or encroachment in relation to the outstanding features of the street such as property lines, pavement lines, sidewalks, curbs, trees, intersecting roads, drainage facilities, traffic control appurtenances, and utility poles by number. Depending upon the type, complexity, and extent of the intended excavation or encroachment, one or more sets of complete plans and related documents may be required to facilitate the determination of the exact locations of the various parts of the work, the risk of injury to street users, and the effect upon private property, trees, shrubs, and street structures. These documents are to be approved by the BPWD.

6. Diagram of location, size, and number of paved area cutouts anticipated.

7. Proposed method of excavation and backfill including submittal of the lab-certified current maximum dry density, and corresponding moisture content (ASTM D 1557) of the granular material to be used. Granular material reports must include stockpile location address, and a detailed description of tested material stockpiled in the event additional testing is necessary.

8. Laboratory test results signed by a Professional Engineer certifying that backfill material conforms to the requirements of MHD M1.03 Processed Gravel for Sub-base. These results shall include:

    1.) Sieve Analysis
    2.) Maximum Dry Density
    3.) Moisture Content

9. If recycled gravel backfill is proposed, laboratory test results signed by a Professional Engineer must be submitted and shall include:

    1.) Sieve Analysis
    2.) Maximum Dry Density
    3.) Moisture Content
    4.) Aggregate Soundness Test
    5.) Los Angles Abrasion Test
    6.) Percentage Volume by Weight of material classification (i.e. brick, concrete, etc.) in Backfill

All results must be submitted each year. Lab results from the previous year shall not be accepted.

Sec. 3.07 BPWD Permit Application (Con't)

10. If proposed backfill lift thickness methodology exceeds (8") eight-inch loose layers, additional certified reports signed by a registered Professional Engineer engaged in this business shall be required. All Contractors must demonstrate proof of proper compaction and maximum dry density through a control test strip. Certified reports must document the name of the Contractor engaged in backfilling operations of Boston streets, control test strip location address, model name and type of equipment used, certified maximum dry density and corresponding moisture content (ASTM D 1557), material lift thickness, and statement certifying the minimum and maximum material thickness to achieve a minimum of 95% laboratory maximum dry density. Note that these reports must be updated each spring; lab reports from the previous season shall not be accepted.

11. Verification that the applicant is currently a qualified, licensed, bonded excavator in Boston, Massachusetts.

12. The issuance of a permit does not excuse compliance with, or duties and responsibilities under, any other applicable regulation, ordinance or law and specifically requires compliance with the General Statutes as amended. An approved "Dig Safe" authorization number shall be maintained.

13. The issuance of a permit in no way obligates the BPWD to issue, continue, or extend any permitted work; relocate the facilities of others encountered during the initial installation; or any other responsibility.

14. In the event that work, encroachment, or repairs not designated in the original permit must be performed in the same location, the Permittee shall make an application to the BPWD for a permit authorizing such additional work, encroachment or repairs.

15. Any person making, causing or maintaining any excavation or encroachment has the responsibility and obligation to determine whether or not all or any part of such excavation or encroachment traverses a city roadway, and to determine from the BPWD whether or not any such excavation or encroachment requires a permit under these Rules and Specifications.

16. Insurance Certificate for all persons and vehicles used to execute said Permit issued.

17. (3) Three references, preferably from municipalities, are required for all new Contractors.

18. Contractor must forewarn all impacted abutters, providing them with a phone number and the name of a contact person to answer any questions.

19. Signature of Permit applicant.

20. Appropriate fees and Security based upon the reasonable cost of administering the Rules and Specifications enacted by the City of Boston shall be established by the Commissioner and confirmed by the Street Opening Clerk.

21. Permittees performing excavation work that falls under the criteria of Jackie's Law will be required to apply for a separate permit from the BPWD permit branch regarding the qualifications of the excavator operator(s) digging trenches in the City's public way. The Inspectional Services Department (ISD) requires a separate permit for work performed on private property. The Jackie's Law permit will be in addition to the BPWD street opening permit, and the BTD approval form. The approved "Jackie's Law" permit shall be posted in plain view on the site of the trench.

Sec. 3.07 BPWD Permit Application (Con't)

B. Application forms shall be available from, and submittals shall be given to, the Permit Branch at the Boston Public Works Department (BPWD).

C. All BTD Rules Regulations and Permit requirements shall be adhered to. **The BTD approved construction management plan must be on the jobsite at all times.**

D. The BPWD requires the Permittee to call the BPWD before specified construction activities. The Permittee must call 617-635-4950 to notify the BPWD Construction Inspection Unit (CIU) 24 hours in advance of each of the following activities listed below. Failure to notify the BPWD CIU may result in project shut down and subsequent police enforcement, unless otherwise approved by BPWD.

    1. Work starting
    2. Backfilling
    3. Paving Operations
    4. Completion of work

E. **All repairs must fully comply with ADA and AAB standards**. Any repairs found to be in violation of ADA or AAB standards become the sole responsibility of the Permittee.

F. The Permittee is required to **maintain a compliant, temporary pedestrian passageway including signage around the construction** area according to ADA and AAB standards. The Permittee must maintain safe, unobstructed vehicular traffic throughout construction.

G. The Permittee granted access by BPWD to *COBUCS* must input all required information during all phases of the proposed work within the City of Boston. Required information will include work that is in planning, permitted work, project progress, and project completion. **If the granted Permittee fails to enter the required information into *COBUCS* all Permit requests shall be denied to that Permittee.**

Sec 3.08 Traffic Management Plan

All applicants requesting permits for excavations are required to meet with the BPWD and the BTD to discuss the scope of work and necessary conditions prior to application. Focusing on public safety, the meeting shall cover acceptable traffic and parking impacts, street surface conditions, and the convenience of travel as it pertains to the excavation of the project. To guarantee all regulations are being adhered, the BPWD may assign a full time BPWD/BTD inspector to the project. The applicant will also be required to submit for approval plans and specifications, which include a traffic control plan certified by a registered professional engineer in the State of Massachusetts, prior to the issuance of a permit. The applicant shall provide an "as built plan" showing location and grades of all utilities affected by this permit. An 'as built plan' must be prepared by a licensed Land Surveyor, and submitted to the BPWD before the installation of the backfill, pavement foundation, and hot mix asphalt. No utility work shall be backfilled until the BPWD has inspected and approved the work.

All entities working within the City of Boston must arrange to allow access for planned street cleaning, trash and recycling collection. All construction must be coordinated to avoid conflict with these activities. Information on sanitation and street sweeping schedules can be found on the Public Works web page or call the Sanitation Office at (617) 635-7573.

Sec. 3.09 Emergency Permits

It is the policy of the BPWD that emergency permits are issued only when an emergency situation arises. **If it is determined by the BPWD that a Permittee is misusing emergency permits the job will be shut down and a meeting shall be scheduled with the Permittee's highest level of management, the Chief of Public Works and Transportation and a Representative from the Mayor's Office.** The abuse of emergency Permits could result in the suspension of all permits and further legal action taken by the City of Boston. Emergencies shall be worked on continuously until the repairs are complete and the disturbed pavement restored to grade level with hot mix asphalt. If the repairs cannot be completed within a 24-hour period, the Permittee is required to follow the standard non-emergency permitting process for authorization to occupy and/or excavate the public way. Leaving a job site after correcting an emergency situation without closing the excavation creates an unwarranted safety hazard for the Department and shall not be tolerated.

If a Permittee fails to convert an emergency permit to a standard non-emergency permit (PWD) after the twenty-four hour permit period has expired, **no new permits** shall be issued until a standard non-emergency permit for that location is obtained.

Activation of a new PWE permit on a prior Emergency Permit location where the Permittee has vacated the work zone will be considered an abuse of the non-emergency permit policy. The job will be shut down until a non-emergency permit is issued.

The following rules shall apply when an emergency opening is required:

A. When an emergency is declared by a Permittee the BPWD must be notified by calling the Permit Branch at 617-635-4910 with the following information:

    1. Exact job location
    2. Nature of emergency

B. When it becomes necessary for any Permittee to make an Opening into a **"Guaranteed Street"** or any street undergoing reconstruction or resurfacing by the BPWD, either Controlled Density Fill (CDF), processed gravel, or a recycled backfill material shall be required.

C. Immediately upon activating an emergency permit a Utility is mandated to notify the Public Works and Transportation Departments citing the location and reason for the emergency. In addition to this information the BPWD will require the Mass Hoisting License # also be included on the emergency notification to the City. Within 24 hours the City will expect the standard Jackie's Law Permit application to be filled out and filed with BPWD in the Permit Branch.

D. Failure to comply with the rules for emergency excavation shall be in violation of existing City Ordinance – Excavation without Permit.

Sec. 3.10 Safety

All work must be conducted in strict accordance with the latest Regulations of OSHA. All work shall be performed in accordance with the BPWD Rules and Specifications, or in a manner as prescribed by the BPWD for circumstances not covered by the Rules and Specifications.

A. Provisions shall be made for the safety and protection of pedestrian and vehicular traffic during the construction period.

B. The Permittee shall be responsible to furnish and erect all required signs and traffic safety devices.

C. Cones and non-reflecting warning devices shall not be left in operation on the roadway when daytime operations have ceased, unless otherwise directed by the BPWD/BTD. If it becomes necessary for the BPWD/BTD to remove any construction-warning device, or the appurtenances from the project due to negligence by the Permittee, all cost for this work shall be charged to the Permittee.

D. Flashing arrow boards shall be used as directed when operations occupy the roadway, and shall be available for use at all times.

E. All signs and devices shall conform to the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD), unless otherwise directed by the BPWD/BTD.

F. Efforts shall be made to maintain normal traffic flow. Interruptions or obstructions to traffic shall be defined by conditions of the Permit.

G. When in the opinion of the BPWD/BTD the work constitutes a hazard to pedestrians and/or vehicular traffic in any area, the Permittee may be required to suspend operations during certain hours, and is obligated to remove any equipment from the roadway.

H. When a snow or ice condition exists during the progress of work, the Permittee shall maintain a safe work zone for the vehicles and pedestrians. The BPWD/BTD may restrict or suspend all construction activities during snow, sleet, or ice storms and subsequent snow removal operations.

I. The roadway surface shall be kept clean of debris at all times, and shall be thoroughly cleaned upon the completion of any work at the end of every shift.

J. Blasting, if necessary, shall be done in accordance with state law and local ordinance.

K. The Permittee shall supply copies of all log data and analyses collected from groundwater monitoring wells as required by state law and local ordinance.

L. Massachusetts Highway Department Standards for Line Clearance shall conform to the National Electric Safety Code Standard Clearance for Highway Crossings.

M. The Permittee is required to provide (2) two white Plasticade® sign board stands at the beginning and end of each work zone. (1) One signboard may be used on one-way streets. Each stand must contain a white reflective sign on both the front and back at least (36") thirty-six inches in height by (24") twenty-four inches in width with black lettering at least (6") six inches in height. Each sign shall clearly identify the Permittee's name followed by the word "Worksite", primary phone number, and website address if available. See the BPWD Permit Branch for detailed lettering layout specifications.

Sec. 3.10 Safety (Con't)

N. All Permittees shall conduct and carry out excavation work in such a manner as to avoid unnecessary inconvenience and annoyance to the general public and occupants of the neighboring property. The Permittees shall take appropriate measures to reduce to the fullest extent possible any noise, dust, or unsightly debris between the hours of 7:00 a.m. and 6:00 p.m. The Permittee shall not use, except with the express written permission of the BPWD or in case of an emergency as herein otherwise provided, any tool, appliance, or equipment producing noise of sufficient volume to disturb the sleep of the neighboring property.

O. The Permittee shall be required to take all necessary precautions to protect private property from damage and to prevent unnecessary inconvenience to residents in the City of Boston by providing a safe means of access to private and commercial property throughout the duration of any construction project

P. **Any public safety hazard shall not be tolerated. If such a condition exists the Permittee is required to respond and resolve this issue immediately. Failure to respond to a public hazard and rectify the situation shall result in work stoppage and suspension of non-emergency permits.**

Sec. 3.11 Protection of Municipal Storm Drain and Sewer Systems

A. The Permittee shall protect all storm drain and sewer appurtenances located adjacent to and within the construction site. The protection measures used shall be designed to prevent the discharge of pollutants into any portion of the storm drain and/or sewer system.

B. The Permittee shall be responsible for the removal of all construction debris, dirt, trash, rock, sediment, sand or other pollutants that may accumulate in the storm drain or sewer conveyance systems as a result of construction activities associated with a permit.

C. No person shall cause the impediment of storm water flow in the flow line of the curb and gutter.

D. The Permittee shall prevent sediment, debris, and all other pollutants from entering the storm water and sewer systems during all phases of construction.

E. The cleaning of cement truck delivery chutes is prohibited at the job site, unless confined in a predefined, bermed containment area. The discharge of water containing waste cement to the storm drain or sewer systems is prohibited.

F. The Permittee shall protect all storm drains and sewer facilities adjacent to any location where pavement cutting operations involving motorized wheel cutting, saw cutting, or abrasive water jet cutting are to take place. The Permittee shall remove and properly dispose of all waste products generated by said cutting operations on a daily basis. The discharge of any water contaminated by waste products from cutting operations to the storm sewer system is prohibited.

G. The discharge to the storm drains and sewer systems of water used for flushing off paved surfaces is prohibited, unless measures have been taken to remove pollutants from the discharge.

H. The use of rebar, steel stakes, or steel fence posts to stake down straw or hay bales, or to support silt fencing used as a sediment control measure, is prohibited.

Sec. 3.12 Secure Site

At the end of each day the street opening shall be secured by a steel plate, hot mix asphalt, or modified cold patch as outlined in these Rules and Specifications. **No opening shall be left in gravel.**

The BPWD may make exception to the plate requirement upon special circumstance as determined by the Boston Transportation Department. On such locations where an open excavation site is to be left unattended, the site must be secured as defined by the Boston Transportation Department Traffic Management Plan and the Commonwealth of Massachusetts General Law Chapter 82A as stated below.

520 CMR M.G.L. c. 82A § 14.04

Where barriers are used to protect an unattended excavation they shall comply with the following provisions:

1. A continuous barrier not less than six feet in height shall surround the unattended trench.

2. All barriers shall be of adequate strength and shall be supported in a manner that will allow them to be seen by the motorist and provide a stable support not easily blown over by the wind or traffic.

3. Trench barriers adjacent to high speed traffic may include traffic control barrels ballasted by sandbags or temporary pre-cast concrete barriers as components.

4. Trench barriers comprised of multiple sections shall allow not more than four inches between each section. Adjacent sections must be securely fastened to each other.

5. Any openings between the ground and barrier shall not exceed 4 inches.

6. Barriers shall be at a sufficient distance from the trench to be unaffected by changing conditions of the trench site

SECTION 4.00

TECHNICAL STANDARDS –Excavation and Backfilling Procedures

Sec. 4.01 General

Any person or utility having obtained a street or sidewalk opening permit shall be fully responsible for restoring streets, sidewalks, walkways, driveways and their appurtenances (i.e. granite curb, underdrain, filter fabric, sewer and drainage structures, median strips, signage pavement markings, traffic signal loops, handicap access ramps, etc.) in complete compliance with the BPWD's Rules and Specifications. All persons and utilities are encouraged to obtain a current copy of the City of Boston Rules and Specifications from the BPWD's office. If directed by the BPWD, photographs shall be taken prior to the start of work to insure the restoration of designated areas back to, or better than, their pre-construction conditions. Copies of the photographs shall be delivered to the BPWD.

Sec. 4.02 Excavation Requirements

All excavation work must be conducted in strict accordance with the latest Regulations of OSHA. All excavations shall be performed in accordance with the BPWD Rules and Specifications, or in a manner as prescribed by the BPWD for circumstances not covered by the Rules and Specifications.

Any site where the excavation is in excess of 3 feet below grade and the depth of which is, in general, greater than the width, but the width of the trench, as measured at the bottom, is no greater than 15 feet will be subject to "Jackie's Law" and all regulations therein.

A. Cutting pavement in streets:

1. The Permittee shall make every effort to minimize damage to the pavement. The Permittee shall promptly repair any pavement damage created by the Permittees excavation.

2. Initial excavations into paved street surfaces shall be precut in a neat line to the full depth of the existing pavement using one of the following methods: motorized wheel cutting, saw cutting, cold planning, or pneumatic chiseling.

3. Heavy-duty pavement breakers may be prohibited by the BPWD when the use endangers existing substructures or other property.

4. No irregular shapes or jagged edges shall be acceptable. No cut shall be shaped in such a way that it would prevent compaction rollers and plates from being adequately utilized in the area. The shape of pavement cutouts shall be rectangular, unless otherwise agreed to by the BPWD and the Permittee. All irregular shaped cuts or damaged pavement shall be repaired at the expense of the Permittee.

5. Pavement edges shall be trimmed to a neat vertical face, free of loose materials and neatly aligned with the centerline of the trench.

6. Unstable pavement shall be removed over undermined areas and over-breaks, and the sub-grade shall be treated as the main trench.

7. Saw cutting of Portland unreinforced cement concrete is required. The depth of the cut must be the full depth of the pavement and concrete, unless otherwise directed by the BPWD. Saw cutting may be required by the BPWD outside of the limits of the excavation over undermines, over-breaks, or small floating sections.

8. Approved cutting of the pavement surface prior to excavation is required in order to minimize pavement damage to the limits of the trench, unless otherwise directed by the BPWD.

9. Tunneling, boring, or other methods may be required by the BPWD. When a Permittee installs a service to a customer an opening may be made over the common supply line to make the proper connection.

B. Cutting Sidewalks:

1. All sidewalk, specialty sidewalk, walkway, driveway, esplanade, and lawn areas shall be ***permanently restored by the Permittee***, and shall be done in compliance with the applicable BPWD Rules and Specifications standards, unless otherwise directed by the BPWD.

2. The Permittee shall restore and resurface any disturbed area as a result of excavation immediately upon completion of proper backfilling operations. See Section 4.04.

3. All cuts on concrete sidewalks shall be made from the nearest joint or score line on one side of the excavation to the nearest joint or score line on the other side of the excavation.

4. All cuts on brick sidewalks shall be made by neatly squaring all edges of the excavation to the nearest line of full size bricks. All bricks in the way of excavation shall be neatly removed by the Permittee prior to any other work being performed, and either paid for as part of the permit fee, reset (if approved by the BPWD), or delivered to the BPWD Highway garage.

5. All cuts on asphalt sidewalks shall be made by neatly squaring all edges to form a rectangular shape at a 90° (degree) angle.

6. Driveway excavation shall incorporate the full width of the driveway opening and extend from the gutter line on the street to the street right-of way. If the driveway opening is (>= 20') twenty feet or greater in width from cornerstone to cornerstone, the BPWD may approve a reduction in excavated area.

7. The Permittee shall replace the sidewalk in accordance to all applicable standards for sidewalks herein, and shall repair any damage caused by the Permittees activities at no additional cost to the City of Boston.

8. If the sidewalk is to be closed at any time the Permittee must provide (2) two ***MUTCD R9-10*** "Sidewalk Closed – Use Other Side" signs on either side of the site at the nearest intersecting street corners. All signs must conform to the MUTCD (Manual on Uniform Control Devices) requirements.

C. The Permittee shall not be required to repair pavement damage outside of their work zone existing prior to the excavation, unless their cut results in small floating sections that may be unstable, in which case the Permittee shall remove the unstable portion and the area shall be treated as part of the excavation.

D. Street Openings deeper than (5') five feet shall require shoring and bracing, adhering to the Occupational Safety and Health Act (OSHA). This includes where unsafe conditions are created due to composition of the soil, climatic conditions or construction operations.

E. All Excavated Material shall be removed from the jobsite. The trench area shall be backfilled with either new processed gravel conforming to Commonwealth of Massachusetts Department of Public Works (MHD) standard specification M1.03.1 "Processed Gravel for Sub-base", or a City of Boston approved Recycled Backfill Material. All materials must conform to the requirements of Section 5.03.

F. The Permittee must have on site, and provide to the CIU inspector upon request, certification that the backfill material conforms to the requirements of Section 5.03.

Sec. 4.02 Excavation Requirements (Con't)

G. The Permittee may re-use suitable excavated material for backfill provided that this material is tested and certified by a professional engineer to meet specification requirements under Section 5.03(A). All testing expenses shall be the responsibility of the Permittee.

H. The maximum dry density of material to be used for backfilling purposes, along with the corresponding moisture content in accordance with ASTM D1557, shall be filed at the time of application to obtain a permit. The BPWD reserves the right to verify maximum density and field density at any time.

I. At the time of permit application the applicant shall be required to pay a restoration cost for all Belgian Pavers/granite paving blocks, cobblestones, or bricks expected to be removed as a result of excavations within the right of way, unless these materials are required to be replaced, or are delivered in good condition to the BPWD's Highway garage.

J. Ledge must be cleared from utility trenches prior to backfill so as to provide a gravel cushion of at least (6") six inches below and on both sides of the utility being installed

K. Under no circumstances shall an open excavation be left unattended overnight, unless properly barricaded and approved by BPWD/BTD.

Sec. 4.03 Steel Plates

The BPWD requires notification at the time of Permit application that the Permittee intends to use steel plates. This notice shall be printed on the Permit for the attention of the BPWD and inspection personnel**.** Steel plates shall only be used when the Permittee is unable to backfill the same day excavation occurs. **No excavation shall remain open after working hours**. All excavations and trenches shall be backfilled or steel plated prior to the cessation of work on every day unless otherwise directed by the BPWD. Two-way traffic must be maintained at all times, unless otherwise authorized by BTD.

The BPWD will not allow any work zone(s) with steel plate(s) to be abandoned due to lack of staffing or administrative apathy. **New permits will be denied** until the abandoned work zone(s) with plate location(s) have resumed work unless otherwise directed by the BPWD.

In the event steel plates are left unattended, the Permittee is required to notify the CIU in writing of the reason(s) and necessity of the plate(s), as well as the estimated time before resuming their work. **Failure to comply may result in the BPWD denying new permit requests.**

It is the responsibility of the Permittee to perform a **daily monitor** of all active plate(s) or unattended plate(s) location(s), and where necessary take appropriate measures to protect the public safety until work commences**.**

On any plate(s) left unattended by the Permittee that has shifted or moved, exposing part of or all the excavation creating a public safety hazard, the Permittee will be cited in violation of "Jackie's Law", as well as in violation of the PWD Rules and Specifications.

A. If steel plates are used to protect an excavation they shall be of sufficient thickness to resist bending, vibration, loud banging etc. under traffic loads. All steel plates must be securely anchored to prevent movement. **If these conditions are not met the Permittee shall be required to backfill and pave the excavations daily**.

B. All steel plates must meet ASTM A 36 steel (minimum), having a thickness sufficient for supporting the intended traffic load with a maximum allowable deflection of (3/4") three-quarter inch. Steel plates must completely cover the open trench and have a minimum overlap on adjacent shoulder areas of (18") eighteen inches. Sandy gravelly soils with large angles of repose, as determined by the BPWD, may require larger plated shoulder areas.

C. All steel plates must be treated with an asphalt based sound dampener, such as Soundamp E available from SOUND SEAL, or an approved industry equivalent.

D. All plates shall identify the Permittees name and 24-hour phone number. Company name and phone number shall be identified on both sides of each plate.

E. Conditions for Steel Plate Usage:

1. ***Arterial / Collector Streets:*** All plates must be ***recessed*** and secured to the adjacent pavement surface, or secured by other BPWD approved method. If ***plates are NOT recessed*** the plate must be ramped with a (2') two-foot width of hot mix asphalt or modified cold patch in the travel direction and a (1') one-foot ramp in the non-traveled direction. All modified cold patch shall be blotted with a stones and to prevent tracking.

2. ***Local or Non Arterial / Collector Streets:*** All plates will be recessed to the adjacent pavement surface or secured by other BPWD approved method . If ***plates are NOT recessed*** the plate must be ramped with a (2') two-foot width of hot mix asphalt or modified cold patch in the travel direction and a (1') one-foot ramp in the non-traveled direction. All modified cold patch shall be blotted with a stones and to prevent tracking.

Sec. 4.03 Steel Plates (Con't)

3. ***Arterial / Collector Streets:*** | ***Local Non Arterial / Collector Streets:*** Any location requiring a steel roadway plate for more than ***(3) three days*** *shall require the plate to be recessed and secured to the adjacent pavement surface, unless otherwise authorized by the BPWD.*

4. During the Winter Moratorium Period, November 15th until April 15th, Steel Plates shall not be allowed on any Street in the City of Boston. **In the event that placement of the steel plate(s) is unavoidable the contractor must recess the plates, place warning devices on the plates, and notify the CIU and the BPWD of all plate locations**. Steel Plate locations must be reported by calling 617-635-7560, and faxing the locations to 617-635-7551.

5. When conditions on City of Boston Streets **do not allow recessing**, the Permittee must provide a **detailed explanation in writing** to the BPWD/CIU.

6. The plates shall be secured to prevent any lateral movement. If movement occurs, the Permittee will be notified to re-secure plating immediately; otherwise the Permittee shall be charged 115% of the cost incurred by the City of Boston to secure the Permittees plates.

7. The Commissioner may require recessed steel plates in special situations such as Public events, etc.

8. **ALL PLATES PLACED MUST BE SAFE AND SECURE WITH A SMOOTH TRANSITION.**

Sec. 4.04 Backfill Requirements

A. **THE BPWD CONSIDERS BACKFILLING THE MOST IMPORTANT EVENT DURING STREET OPENING CONSTRUCTION.**

B. All work must be conducted in strict accordance with the latest Regulations of OSHA regarding excavations.

C. The Permittee shall notify the BPWD before backfilling any excavation, allowing adequate time for inspection by the BPWD's Construction Inspection Unit (CIU) as outlined in Section 6.01.

D. The Permittee shall backfill all excavations as soon as it is practical so that the least possible subsequent settling shall occur. In most cases backfilling shall occur on the same day as the excavation, however if not possible due to the complex nature of work, emergency, or unpreventable conditions, the Permittee must notify the BPWD immediately upon determining backfilling cannot occur. The Permittee must take all appropriate measures to protect public safety and infrastructure until work commences. Permittees are required to contact the CIU before any and all backfilling operations allowing adequate time for inspection of the site.

E. All construction materials must be protected from freezing using acceptable standard industry practices.

F. Temporary or permanent sheeting, shoring or bracing shall be used to support the sidewalls of the trench, preventing the undermining of the full depth of (12") twelve inches, stable shelf of undisturbed street base and the existing adjacent pavement. This installation shall be required to maintain the safety of personnel and traffic. Steel sheeting, shoring, or bracing shall be driven or placed for all depths over (5') five feet. When sheeting and bracing are to be wholly or partly removed, this shall be done as backfilling progresses. When backfilling has reached the bottom of a brace, its horizontal ranger shall be removed. This procedure shall be repeated throughout the backfilling operation. The sheeting shall be pulled in short increments with every precaution taken to avoid significant lateral movement at the sides of the trench. All backfill in the space formerly occupied by the sheeting shall be thoroughly and properly compacted during and after pulling the sheeting.

G. Whenever standing water is located in the excavation area, the water and saturated soils shall be removed by pump or other means before backfilling operations begin. If water remains due to a high water, table then the following backfilling methods shall apply:

    1. Filter fabric shall be placed to form a lining for the crushed stone backfill to be wrapped in. The filter fabric must completely cover the stone backfill when placed. Crushed stone meeting MHD standard specifications must be placed to the height of saturation and completely wrapped in filter fabric.

    2. Backfill requirements shall be dependent upon vertical trench area absent of saturation. A minimum of (24) twenty-four inches of processed or approved recycled gravel shall be spread in layers not exceeding (8") eight inches in loose depth and compacted to no less than 95% of the maximum dry density of the material, ASTM D1557, up to the base of temporary pavement. Should a vertical zone exist between the saturation zone and gravel zone, the backfill methods outlined in Section 5.04(D) may be utilized.

H. Broken pavement, large stones (those greater than a (3") three-inch diameter), roots and other debris shall not be used in backfill. Unused excavated material shall be removed from the jobsite and disposed of in such a manner that shall minimize interference and obstruction of pedestrian and vehicular traffic. No material shall be left within the right-of-way once the repair and/or installation has been completed.

I. Roadway openings requiring a gravel backfill shall be backfilled using approved **MHD M1.03.1 Processed Gravel** for sub-base **or approved recycled gravel**, see section 5.03, compacted in ***(8") eight-inch loose layers*** **to 95%** of maximum **density**, unless otherwise approved by the BPWD, see section 3.07(A)10.

Sec. 4.04 Backfill Requirements (Cont'd)

J. The Permittee may re-use suitable excavated material for backfill, provided that this material is tested and certified by a professional engineer to meet specification requirements under Section 5.03(A). All testing expenses shall be the responsibility of the Permittee.

K. If the Permittee can demonstrate through a Professional Engineered control test strip accompanied with test results that a minimum of 95% of maximum density can be achieved at lifts greater than 8" thicknesses using a Hydraulic Vibratory Driver/Ho-Pac; Vibratory Steel Drum roller; Jumping Jack; Pneumatic Hammer with base plate attachment; a Vibratory Plate Compactor; or other device as stated in Section 3.07(A)10, then greater lift thickness may be approved by the BPWD.

L. When the excavated material is primarily clay, it shall be allowed for use as backfill only upon the written approval of the BPWD with the intention of minimizing differential settling. If approved, an (18") eighteen-inch compacted layer of processed or approved recycled gravel must be placed prior to the temporary (3") three-inch hot-mix asphalt surface. Backfilling, using in-situ clay, must be conducted by design and observation of a registered professional engineer in the soils trade.

M. If a layer of concrete, cobblestone, granite pavers, or other supporting material exists, the Permittee shall install concrete to match the existing depth prior to the installation of temporary pavement.

N. When gravel backfill cannot effectively be compacted to 95% of the maximum dry density of the material with traditional equipment due to multiple conduits, ducts and pipes, or manhole/catch basin structures then Control Density Fill (CDF) may be required.

O. The BPWD may require nuclear field density testing (AASHTO T-238 and T-239) for compaction and moisture prior to adding materials for subsequent layers. All testing expenses will be the responsibility of the Permittee.

P. If the sidewalk is to be closed at any time the Permittee must provide (2) two ***MUTCD R9-10*** "Sidewalk Closed – Use Other Side" signs on either side of the site at the nearest intersecting street corners. All signs must conform to the MUTCD (Manual on Uniform Control Devices) requirements.

Q. The requirements of this Section are intended to maximize compaction, resulting in minimal settling.

Sec. 4.05 Control Density Fill (CDF)

A. Certain circumstances as determined by the BPWD may require Controlled Density Fill (CDF) as an alternate backfill material. The BPWD shall allow Controlled Density Fill (CDF) under the following conditions:

1. ***When gravel backfill cannot be effectively compacted around existing structures, multiple conduit, ducts, pipes, and/or*** **trenches exhibiting pockets and voids along the trench walls.**

2. When it is necessary for any Permittee to make an opening into a street that is in conflict with street reconstruction or resurfacing by the BPWD.

B. Only Type IE Excavatable Flowable Fill shall be allowed. These mixtures are designed to exhibit very flowable characteristics ideal for filling small, hard to reach areas such as multiple duct trenches whereby maneuvering compaction equipment would be difficult. Type 2E Excavatable Flowable Fill can also be used, however, Type 2E is not as flowable as Type 1E. The BPWD further requires:

1. A certified, approved CDF mix design must be submitted prior to use. The BPWD shall dispatch an inspector to the production plant to conduct quality assurance testing and inspection.

2. CDF usage during the Winter Moratorium shall adhere to Section 5.10(B)2.

3. CDF is not to be used in situations that shall cause floating of utility lines, or in the presence of ductile iron, cast iron or steel pipes.

4. CDF placement in trenches must be fully barricaded or under police supervision for a minimum of twenty-four (24) hours after the pour, or until a set is reached that shall prevent a hazard to animals or humans.

5. Certain utility lines may be separated with a cover of sand backfill prior to CDF.

6. **In no case shall CDF come in contact with the hot-mixed asphalt layer of a street. CDF shall be allowed as a bedding material around ducts, conduit and pipes only.** Thereafter, backfill shall be gravel in accordance to Section 4.04. The interface between the top of the CDF and bottom of the hot-mixed asphalt shall have a minimum (24") twenty-four-inch base of processed or approved recycled gravel to allow internal pavement structure lateral drainage.

SECTION 5.00

TECHNICAL STANDARDS – Restoration of Streets and Sidewalks

Sec. 5.01 Temporary Paving of Streets Openings

No street opening shall be left in gravel. At the close of each day all openings that are backfilled must be made safe and level with the adjacent roadway utilizing either steel plates, hot mix asphalt, or temporary cold patch to prevent the spread of dust and debris from inclement weather and/or traffic. These requirements shall be applied to all emergency openings. Temporary cold patch must be replaced with hot mix asphalt within 48 hours.

A. The Permittee shall notify the BPWD before any paving operations begin, allowing adequate time for inspection by the BPWD's Construction Inspection Unit (CIU) as outlined in Section 6.01(B).

B. All traffic devices, signs, pavement markings or traffic loops disturbed, damaged, altered or removed by the Permittee shall be promptly replaced by the Permittee, unless otherwise directed by BTD, in accordance with the BTD and the State of Massachusetts Rules and Specifications. Street markings (centerlines, crosswalks, stop bars, lane markings, etc.) and traffic loops must be replaced no later than (72) seventy-two hours after completion of work, or as directed by the BTD. If work disturbs centerlines or lane markings on arterial/ collector streets the Permittee shall, and has the duty and obligation to, place reflective markers immediately after temporary pavement is placed. The cost including incidental items used in making all repairs such as tack coat, crack seal, towing, and police details, are the sole responsibility of the Permittee.

C. All traffic control signs (i.e. STOP, YIELD, DO NOT ENTER, ONE WAY, NO PARKING, SPEED LIMIT, CURVE WARNINGS, etc.) approved by the BTD for removal, relocation, replacement, etc. must be immediately replaced by the Permittee, unless otherwise directed by the BTD. No such traffic control sign shall be removed, relocated or replaced without approval from the BTD.

D. The Permittee shall install temporary pavement consisting of hot-mixed asphalt upon completion of backfilling operations. **The Permittee shall take every reasonable measure to completely install temporary paving on the same day excavation occurs**. If same day paving is not achievable due to complexity of work, emergency, or unpreventable conditions, the Permittee must notify the BPWD immediately and take appropriate measures to protect the public safety and infrastructure until work recommences. The most stringent measures shall be required on arterial/collector streets. Same day paving is required if work is not expected to be continued the next day, regardless of location.

E. All temporary pavement shall be meet MHD M3.11.00 Class I Bituminous Concrete or MHD 9.5mm Superpave hot mix asphalt placed in (2) two compacted lifts each having a depth of (1½") one-and-one-half inches resulting in a total depth of (3") three inches.

F. Any bar holes made in the street or sidewalk of any public way shall immediately be filled with compacted, granular material up to (3") three inches below the paved surface with the remaining (3") three inches filled with an approved asphalt or concrete plug.

G. The Permittee is responsible to repair cave-outs and undermined areas of a trench prior to paving as defined in Section 4.02(A). The full perimeter of this opening shall be cut square to the full depth of the existing pavement. All edges shall be vertical and clean of debris. A tack coat shall be painted to the pavement sidewalls of the entire excavation to prevent water infiltration.

H. **Hot-mixed asphalt paving of trenches of over (100') one hundred feet in length shall be paver-applied, unless otherwise authorized by the BPWD.**

Sec. 5.01 Temporary Paving of Streets Openings (Cont'd)

I. If emergency repairs are completed when hot mix asphalt plants are closed, the Permittee may use Modified cold patch or Modified Winter Stockpile mix (see Appendix A). The Permittee is required to maintain the repair with Modified cold patch or Modified Winter Patching Material to the satisfaction of the BPWD until hot mix asphalt is available. When hot mix asphalt becomes available the Permittee is required to remove all Modified cold patch or Modified Winter Patching Material and perform the Temporary Repair as described in Section 5.10.

J. Temporary paving shall be uniform, smooth and level to the adjacent pavement surface.

K. **The Permittee shall be responsible for the proper placement and maintenance of the temporary pavement. The Permittee is required to keep the temporary pavement in acceptable condition for a minimum of (3) three years.**

Sec. 5.02 Permanent Pavement Restoration of Streets

Permanent restoration of streets shall be made by the BPWD, unless otherwise authorized by the Commissioner.

A. **On streets where curb-to-curb resurfacing occurs, the Permittee will be required to install or reconstruct compliant pedestrian ramps at all corners and within the limits of the work to current ADA and AAB regulations.**

B. All traffic devices, signs, pavement markings or traffic loops disturbed, damaged, altered or removed by the Permittee shall be promptly replaced by the Permittee, unless otherwise directed by BTD, in accordance with the BTD and the State of Massachusetts Rules and Specifications. Street markings (centerlines, crosswalks, stop bars, lane markings, etc.) and traffic loops must be replaced no later than (72) seventy-two hours after completion of work, or as directed by the BTD. If work disturbs centerlines or lane markings on arterial/ collector streets the Permittee shall, and has the duty and obligation to, place reflective markers immediately after temporary pavement is placed. The cost including incidental items used in making all repairs such as tack coat, crack seal, towing, and police details, are the sole responsibility of the Permittee.

C. All traffic control signs (i.e. STOP, YIELD, DO NOT ENTER, ONE WAY, NO PARKING, SPEED LIMIT, CURVE WARNINGS, etc.) approved by the BTD for removal, relocation, replacement, etc. must be immediately replaced by the Permittee, unless otherwise directed by the BTD. No such traffic control sign shall be removed, relocated or replaced without approval from the BTD.

D. All permanent pavements shall consist of Boston Dense Binder and Boston Top hot-mixed asphalt, unless otherwise directed by the BPWD. The minimum cross section of asphalt shall consist of (2) two compacted lifts of Boston Dense Binder measuring (2½″) two-and-one-half inches each, resulting in a total of (5″) five inches, followed by (1) one compacted course of (1¼″) one-and-one-quarter inch of Boston Top. The resulting minimum depth of (6¼″) six-and-one-quarter inches shall meet the material requirements under Section 5.03(E).

E. When street openings are ready for permanent repair, chalk lines must be laid out at a minimum of (6″) six inches beyond the edges of the disturbed pavement caused by the original trench excavation, utility work, backfilling, or where recessed plates were used. If pavement fracture occurs (blowouts), or projections are made at short intervals outside the trench-line (line scored by pavement breaker), the chalk lines shall be extended out to this dimension to insure a straight trench line. This shall create a stable native shelf for pavement restoration. In no case shall undermining exist in the excavation below this (6″) six-inch shelf.

F. When trenches are located close to the curb-line making it impractical to leave a dimension between the trench-line and the curb, the trench line must be extended to the curb. If excavation, or pavement damage, occurs at or within (24) twenty-four inches of the edge of existing pavement, then the Utility shall be responsible for full depth pavement replacement to the edge of existing pavement.

G. If two or more excavations are made by the same Utility and are within (6′) six feet of one another, edge to edge, they shall be permanently repaired as one trench including the existing pavement between the two excavations.

H. If an excavation is within (6′) six feet, edge to edge, of a permanent repair, regardless of who is responsible for the original repair, the excavation shall be permanently repaired by the Permittee as one trench including the existing pavement between the two excavations.

I. When multiple bar holes were made and not permanently capped, a permanent repair shall be required. The permanent repair shall consist of cutting out a full depth rectangular trench from (6″) six inches before the first hole to (6″) six inches beyond the last hole.

J. All excavations by the Permittee on streets that are scheduled to be, or are actively being, reconstructed or resurfaced shall be tested to ensure 92% compaction on each lift of asphalt, unless otherwise authorized by the BPWD. All testing expenses will be the sole responsibility of the Permittee.

Sec. 5.02 Permanent Pavement Restoration of Streets (Con't)

K. **Hot-mixed asphalt paving of trenches of over (100') one hundred feet in length shall be paver-applied, unless otherwise authorized by the BPWD.**

L. Trenches approximately (100') one hundred feet or longer shall require an overlay/inlay. The width of the overlay/inlay shall be a minimum of (10') ten feet; however the actual width will vary according to the trench configuration as determined by the Commissioner's representative. Multiple trenches less than (100') one hundred feet in length that are in close proximity to one another shall require overlay/inlays. If the BPWD determines that a roadway requires a complete resurfacing, or that a trench requires an inlay, then cold planning shall be required. When a street is opened by more than one Permittee, and damaged as to require curb-to-curb resurfacing, a percentage of all items used to repair the street shall be charged to the various Permittee(s) based upon the proportion of damaged area determined by a consistent methodology. The City may contribute to the cost of curb-to-curb restoration in this circumstance on streets that are over (5) five years old. The Commissioner's representative and the Permittee(s) concerned shall determine the extent of the City's participation after inspection of the street in question.

M. The BPWD has established a list of streets **Resurfaced or Reconstructed** within the preceding **(5) Five years**, under Section 2.01 *GUARANTEED STREETS*. Permittees shall be responsible for curb-to-curb cold planning, resurfacing, and all incidental items necessary to repair these guaranteed streets. The limits of repair shall be no less than the length of the trench/patch and no greater than the original construction, unless otherwise stipulated within these Rules and Specifications.

Sec. 5.03 Material Specification: ROADWAY

A. Pavement base/backfill material shall be MHD M1.03.1 Processed Gravel for Sub-base. The Gravel material, whether delivered to the site or selected from the spoils, must pass a (3") three-inch square mesh sieve and shall not contain frozen material. Material selected from the spoils shall be considered re-used gravel and must be tested by a professional Engineer and approved by the City of Boston prior to use.

B. Recycled backfill material may be used after approval from the City of Boston. Approval shall be made on a case by case basis after the Permittee submits test results signed by a registered professional Engineer certifying that:

1. Recycled material is inert consisting of hard, durable stone, coarse sand and allowable recycled material.

2. Not more than 50% of the material shall be comprised of recycled material. Not more than 5% of the recycled material shall be clay brick. All clay brick shall be fractured into portions smaller than (1/2) one half standard brick length.

3. Concrete shall have (<12%) less than twelve percent volume by weight after (5) five cycles by the magnesium sulfate soundness test.

4. The recycled material shall be free of loam, clay, roots, wood and other deleterious material.

5. The gradation shall meet the requirements for MHD's Processed Gravel for Sub-base M.1.03.1.

6. The coarse aggregate shall have a percentage of wear, by the LA Abrasion Test, of not more than 50.

C. Controlled Density Fill (CDF) Type IE or 2E, Excavatable

1. The CDF ingredients shall comply with the following:

a.	Portland Cement	AASHTO M85
b.	FLY ASH	AASHTO M295, Class F
c.	Fine Aggregate	M.4.02.02
d.	Air Entraining Admixtures	M.4.02.05

2. The CDF must meet the following requirements:

a.	Compressive Strength @ 28 days	= 30 - 80 psi (210-550kPa)
b.	Compressive Strength @ 90 days	= 100 psi max. (700kPa max.)
c.	Slump	= 10 -12 inches (250-300 mm)
d.	Air	= 1%-3.0%

3. Fly Ash CDF shall not be placed if the temperature falls below 20 degrees Fahrenheit.

D. Temporary pavement shall be MHD M3.11.00 Class I Bituminous Concrete or MHD 9.5mm Superpave hot mix asphalt, placed in (2) two compacted lifts, each having a depth of (1½") one-and-one-half inches, resulting in a total depth of (3") three inches.

Sec. 5.03 Material Specification: ROADWAY (Con't)

E. Permanent Pavement Restoration

1. All hot mix asphalt for permanent restoration must be obtained from an approved BPWD asphalt plant.

2. All permanent pavements shall consist of Boston Dense Binder and Boston Top hot-mixed asphalt, unless otherwise directed by the BPWD. The minimum cross section of asphalt shall consist of (2) two compacted lifts of Boston Dense Binder measuring (2½") two-and-one-half-inches each, resulting in a total of (5") five inches, followed by (1) one compacted course of (1¼") one-and-one-quarter inch of Boston Top. The resulting minimum depth of (6¼") six-and-one-quarter inches must meet the material requirements for BPWD asphalt mixture.

F. Portland Cement Concrete shall conform to the requirements of Massachusetts Highway standards for concrete roadway construction.

G. Modified winter Patching Material: See Appendix A.

H. Bar holes shall be filled with an appropriately sized asphalt plug or other material approved by BPWD.

I. New Brick shall conform to the standards set forth by the Boston Public Works Engineering Division.

1. **All bricks shall be for exterior horizontal paving and wire cut type.**

2. All Bricks shall be delivered to the site on pallets or in packages with wax surfaces protected by paper separators or facing each other. Waxed bricks shall be stored protected from the sun.

J. Filter fabric for underdrains shall be Mirafi 140 by Fiber Industries, or an approved equivalent.

K. Loop detectors that are replaced shall adhere to BTD specifications. This shall include providing the (3/8") three-eighth inch wide slots for the detector loops in the bituminous concrete pavement, sealer, and insulated wire embedded in the pavement, and the wire inserted in the (1½") one-and-one-half inch PVC conduit leading from the roadway to a pull box.

L. Pavement Markings that are replaced shall conform to the BTD's Rules and Specifications. All thermoplastic pavement markings furnished and applied by the Permittee shall be in accordance with the Massachusetts Department of Public Works Specifications dated 1988, sections 860 and M7, sub section X7.01. 20 or latest revisions thereof. The raw materials used must be thoroughly melted, blended and mixed in the manufacturing process before delivery.

The material shall be a homogenous blend of resins, pigments, and reflective glass beads throughout, and shall be delivered to the site in granular form.

Sec. 5.04 Methods of Construction: ROADWAY

A. All City Ordinances, laws, contract specifications, and BPWD Rules and Specifications must be strictly complied with for all operations connected with the work defined by the permit. The materials, workmanship, manner and method of executing the work are to be performed to the complete satisfaction of the BPWD.

1. The Permittee is required to furnish all materials and shall be responsible for the job to be executed in an orderly, timely, quality-controlled manner utilizing proper workmanship and construction techniques conducted in accordance with industry standards for the successful completion of the work, backfilling, appurtenant restorations, and pavement repair.

2. All Permittees shall supply a 24-hour phone number should the City need to contact the Permittee. Work shall not start without a permit issued by the Public Works Department, Permit Branch. This permit must be present at the job site at all times. The work is only valid for the days, and number and size of street opening as described on the Permit.

3. The Permittee shall keep a competent foreman overseeing sufficient competent employees to perform the work with all proper speed in accordance with the requirements of the law, other public authorities, and to the reasonable satisfaction of the BPWD.

4. The Permittee shall conduct the work in such a manner as not to unreasonably interfere with other work being done by the BPWD, by contract or otherwise. As deemed necessary by the BPWD, the work done under these specifications shall conform to the progress of said other work. The Permittee shall cooperate with the contractors or employees who may be doing work for the BPWD, and with public service corporations affected by the work, in arranging for storage places, temporary support for structures, repairs, etc.

   All entities working within the City of Boston must arrange to allow access for planned street cleaning, trash and recycling collection. All construction must be coordinated to avoid conflict with these activities. Information on sanitation and street sweeping schedules can be found on the Public Works web page or call the Sanitation Office at (617) 635-7573.

5. **All temporary repairs shall be properly maintained by the Permittee to assure acceptable conditions until the end of the guarantee period or until permanent repairs have been made.**

6. Non-response within the specified time shall result in the required restoration work to be performed by the BPWD. All expenses, including all incidental costs, shall be the sole responsibility of the Permittee plus a 15% administration fee. The Permittee shall reimburse the BPWD for the invoiced amount within (30) thirty days.

7. The Boston Public Works CIU shall inspect all temporary repairs and those found unacceptable shall be subject to the following procedures:

    a. The City of Boston shall notify the Permittee of the location of each unacceptable repair(s).

    b. The Permittee must respond within **(2) two business days** by email or phone **to verify ownership, agreeing that the location is out of compliance with BPWD paving specifications.** Upon acceptance by the Permittee, a violation will be issued. Failure to respond within **(2) two business days** will not extend the required completion date and an automatic **violation will be issued**.

    c. Locations whose ownership or compliance is contested by the Permittee shall result in the completion date being put on hold until a site meeting can be scheduled to resolve the matter. If the CIU determines that the Permittee is contesting the location(s) simply to delay accepting responsibility, a Violation will be issued and no site meeting will be held.

    d. Following acceptance of the location(s), the repair MUST take place **by the end of the following week**. Once the repair has been made the CIU must be notified to perform inspection.

    e. The Permittee is required to perform repairs **FOR ANY PUBLIC SAFETY HAZARD(S) immediately upon notification.**

    f. **Failure to follow this procedure shall result in the immediate suspension of all Non-Emergency Permits.**

B. Initial Pavement Removal

1. Whether accomplished by saw cutting, milling, pavement breaker or other mechanical means the pavement shall be removed such that all surfaces are neat and free of loose materials to affect a tight seal with any new pavement

C. Length of Trench Opening

1. The maximum permissible length of open trench at any time shall be (150') one hundred fifty feet, and no greater length shall be opened for pavement removal, excavation, construction, backfilling, repairing or any other operation without written permission of the BPWD/BTD.

M.G.L. Chapter 82A "Jackie's Law" shall encompass any excavation which is narrow in relation to its length, made below the surface ground in excess of 3 feet below grade and the depth of which is, in general, greater than the width, but the width of the trench, as measured at the bottom, is no greater than 15 feet.

Sec. 5.04 Methods of Construction: ROADWAY (Con't)

D. Placement of backfill/base material

1. All backfill material must be either an approved uniform "MHD M1.03.1 Processed Gravel for Subbase", or City of Boston approved Recycled Backfill Material.

2. The Permittee may re-use suitable gravel materials if, and only if, the Permittee provides certified laboratory reports as outlined in Section 5.03(A), to the BPWD. All testing expenses will be the sole responsibility of the Permittee.

3. The maximum dry density of the material to be used along with the corresponding moisture content, in accordance with ASTM D1557, must be filed at the time of application to obtain a permit. Single source documentation shall be acceptable for multiple permits in a season, provided that every stockpile utilized is accounted for. These documents must be updated every, season.

4. No excavated pavement shall be used, or mixed in, with any backfill material. Reclaimed pavement material meeting MHD Processed Gravel may be used as backfill.

5. The pavement structure backfill/base shall be spread and compacted in ***layers not exceeding (8") eight inches in loose depth***, unless otherwise approved by the BPWD. The gravel shall be compacted to not less than 95% of the maximum dry density in accordance to ASTM D1557, and to the depth required by the BPWD's Rules and Specifications.

6. Gravel shall be placed up to (3") three inches below grade of the existing asphalt so that it may receive the (3") three inches of compacted hot mix asphalt temporary surface.

E. **Temporary Asphalt Pavement**

1. All temporary pavements shall be MHD M3.11.00 Class I Bituminous Concrete or MHD 9.5mm Superpave hot mix asphalt, placed in (2) two compacted lifts each having a depth of (1½") one-and-one-half inches resulting in a total depth of (3") three inches. Temporary pavement shall be installed according to these specifications, which includes the placement, compaction and workmanship in accordance with the applicable provisions of the MHD Standard Specifications for this material. Note that if a layer of pavement material other than hot-mixed asphalt exists (PCC, brick, block, etc.) it must also be replaced with an equal depth of matching material unless otherwise directed by the BPWD.

2. Each (1½") one-and-one-half inch layer of hot-mixed asphalt shall be compacted separately, meeting the requirement of 92% minimum compaction of the standard laboratory maximum theoretical density for the specific material.

3. Hot-mixed asphalt materials shall be laid upon an approved, clean, dry, compacted surface, spread and struck off to the established grade and elevation giving regard to the loss in depth between loose and compacted mixtures. Immediately after the hot mix asphalt mixture has been spread, struck off, and surface irregularities adjusted, it shall be thoroughly and uniformly compacted. Tack coat shall be applied to provide a tight seal preventing water infiltration to the existing pavement.

4. Mechanical compactors shall be allowed for repairs of under (10) ten square yards in area. Repairs exceeding (10) ten square yards shall be rolled with an appropriately sized power-driven, steel-wheeled roller to obtain specification density.

5. The placing temperature of the hot-mixed asphalt mixture shall be between 255°F (degrees Fahrenheit) and 325°F (degrees Fahrenheit). All compaction rolling shall be completed before the mixture cools below 150°F (degrees Fahrenheit), or that temperature allowed by the asphalt binder manufacturer. This shall be checked using a thermometer suitable for this type of work.

F. **Permanent Asphalt Pavement**

The restoration of the permanent pavement or other permanent surface on the streets in the City of Boston shall be performed by the BPWD or contract forces as directed by the Commissioner, and as stipulated in these Rules and Specifications herein.

1. All materials, placement, compaction and workmanship shall be in accordance with the applicable provisions of the BPWD Standard Specifications for this permanent asphalt pavement.

2. Existing paving and gravel materials shall be saw-cut and neatly removed as needed in order to comply with all provisions of this subsection.

3. The pavement structure granular foundation of Processed Gravel shall be brought to true line and grade, and compacted. Should the dept of the trench or patch exceed (3") three inches after compaction from the true line and grade, no new material shall be added. Any deficiency in depth is to be compensated with compacted hot mix asphalt.

4. ***Street openings permanently repaired must be rectangular in shape with all corners being of a (90°) ninety-degree angle.***

5. Hot-mixed asphalt materials shall be laid upon an approved, clean, dry, compacted surface, spread and struck off to the established grade and elevation giving regard to the loss in depth between loose and compacted mixtures. Immediately after the hot mix asphalt mixture has been spread, struck off, and surface irregularities adjusted, it shall be thoroughly and uniformly compacted. Tack coat shall be applied to provide a tight seal preventing water infiltration to the existing pavement.

6. The placing temperature of hot-mixed asphalt shall be between 255°F (degrees Fahrenheit) and 325°F (degrees Fahrenheit). All compaction by mechanical roller shall be completed before the mixture cools below 150°F (degrees Fahrenheit), or that temperature allowed by the asphalt binder manufacturer. This shall be checked using a thermometer suitable for this type of work.

7. All Permanent pavements shall have a minimum cross section of (6¼") six-and-one-quarter inches, and shall be composed of BPWD approved hot mix asphalt.

8. The Boston Top wearing surface must be applied to all openings within one week of installing the Boston Dense Binder.

9. Each layer of hot-mixed asphalt shall be compacted separately meeting the minimum requirement of 92% compaction of standard laboratory maximum theoretical density for the specific material.

10. The bituminous concrete base of "DENSE BINDER" shall be laid in (2) two courses with a maximum depth of (2½") two-and-one-half inches for any one course. Each course is to be thoroughly compacted by a power roller weighing not less than (5) five tons. Where space does not permit the use of a roller, each course shall be thoroughly tamped or otherwise compacted by a method approved by the Commissioner, and to the level of compaction equivalent to that achieved by a roller.

11. The vertical surface of the existing pavement shall be painted with asphalt cement emulsion (RS-1). A bituminous concrete wearing surface of "BOSTON TOP" shall be laid in one course at a depth on (1¼") one-and-one-quarter inches. Once the "BOSTON TOP' has been spread it shall be thoroughly compressed using a tandem roller weighing not less than (10) ten tons. All applicable methods of construction shall conform to the specifications of the Boston Public works Department.

Sec. 5.04 Methods of Construction: ROADWAY (Con't)

12. Hot-mixed asphalt materials shall be laid upon an approved, clean, dry, compacted surface, spread and struck off to the established grade and elevation giving regard to the loss in depth between loose and compacted mixtures. Immediately after the hot mix asphalt mixture has been spread, struck off, and surface irregularities adjusted, it shall be thoroughly and uniformly compacted. Tack coat shall be applied to provide a tight seal preventing water infiltration to the existing pavement.

13. All surfaces and vertical faces of existing pavement shall be neat, free of loose materials, and tack coated with an approved asphalt emulsion by applying the emulsion material per MHD Standard Specifications to fully cover the paved surfaces prior to pavement installation.

14. All top surface joints between the permanent pavement repair and the existing pavement are to be sealed with an asphalt emulsion to prevent water infiltration, and sanded to prevent tracking of emulsion.

15. Castings and Substructures

    a. No person or utility shall without written permission from the BPWD install any substructure other than manholes, valve casings, culverts, or catch basins at a vertical distance less than that required by the BPWD.

    b. Nothing in this section shall impose a duty upon the Permittee to maintain the specifications, as required herein, upon subsequent changes of grade in the surface, unless the grade in the substructure interferes with the maintenance of or travel on a public street.

    c. All existing cast iron structures to be reset shall be adjusted to change in line or grade. All castings shall be set on brick masonry, where necessary, to conform to the line and grade required. After casting has been set to grade on masonry using 50/50 cement and sand Type 3 mixture. Cast iron structures must be encased in bituminous concrete binder or high early strength concrete with a minimum depth of (6") six inches, and for a distance of (18") eighteen inches around the outside of the casting.

    d. Contractors are not allowed to use mortar, brick pieces, or brick chips to construct the structural shim between the catch basin frame, or manhole casting frame, and the lower structure. If a full brick cannot be accommodated between the catch basin frame, or manhole casting frame, and the lower structure then galvanized steel plates must be used to construct the structural shims.

    e. Steel shims must be a minimum of (4") four inches in width and eight inches in length. Steel plates may vary in thickness as required.

    f. The Boston Water and Sewer Commission may designate a concrete collar and ring on some adjustments. See Appendix D.

    g. The bituminous concrete binder shall be placed in two equal courses with each being thoroughly compacted using a pneumatic tamper.

Sec. 5.04 Methods of Construction: ROADWAY (Con't)

16. Loop Detector

    a. Slots in the bituminous concrete pavement shall be cut with a concrete sawing machine to a uniform depth as shown in the BTD's details, and as required in order to accommodate all necessary loop turns or leads. Dry cutting shall not be allowed. Diagonal saw cuts of at least (12″) twelve inches in length must be made at each corner to prevent sharp bends in the wire. The diagonal cuts shall overlap the main cuts so that each wire-bearing slot has full depth.

    b. The cut shall be cleared of debris and thoroughly dried before installation of the wire loop. The wire shall be inserted in the cleared, dried slot with a blunt wooden or plastic tool that shall not damage the insulation.

    c. Loop wire crossing joints or noticeable cracks shall be protected with an approved insulating sleeve for at least (6″) six inches on either side of the joint or crack, and the ends of the sleeving material shall be taped to prevent entry of slot sealing compound in order to prevent bonding of the wire to the pavement. The sleeving shall be furnished and installed at no extra cost, and shall be incidental to the induction loop item. The end of the (1½″) one-and-one-half inch PVC conduit shall be plugged with an approved material, and loop wires entering the conduit shall be sleeved and taped as outlined above

    d. No splice shall be used in the installation of any inductive loop or its lead-in to the appropriate pull box. Loop lead-in wire shall be spliced to the loop in the hand hole or pull box and shall be installed to the controller cabinet without any additional splices.

    e. The pavement slots for the bituminous concrete pavements shall all be filled with an approved two-component embedding sealer strictly in accordance with the directions of the manufacturer. The sealer shall be specifically recommended by the manufacturer for this use in new and existing bituminous concrete pavements.

17. Pavement Markings

    a. Street markings (centerlines, crosswalks, stop bars, lane markings, etc.) and traffic loops must be replaced no later than (72) seventy-two hours after the completion of work, or as directed by the BTD. If work disturbs centerlines or lane markings on arterial/collector streets, the Permittee shall, and has the duty and obligation to, place reflective markers immediately after temporary pavement is placed. The cost, including incidental items such as tack coat, crack seal, towing, and police details used in making all repairs is the sole responsibility of the Permittee.

    b. The Permittee is responsible for replacing the entire crosswalk, even when only a small portion is removed, unless otherwise approved by BPWD/BTD.

    c. All reflectorized pavement markings and equipment shall be furnished and applied in accordance with Massachusetts Department of Public Works Specification dated 1988, Sections 860 and M7 subsection X7.01.20, latest revisions, except as otherwise specified.

    d. All excess thermoplastic deposits shall be removed by a method that is not detrimental to the roadway surface and is acceptable to the BTD, at no additional expense to the City of Boston.

Sec. 5.05 Temporary Restoration of Sidewalk/Walkways/Driveways

No sidewalk opening shall be left in gravel. At the close of each day all openings that are backfilled must be made safe and passable with steel plates, hot mix asphalt, or temporary cold patch to prevent the spread of dust and debris from inclement weather and/or traffic. These requirements shall be applied to all emergency openings. Temporary cold patch must be replaced with hot mix asphalt within 48 hours.

A. The Permittee shall notify the BPWD before backfilling any excavation, allowing adequate time for inspection by the BPWD's Construction Inspection Unit (CIU) as outlined in Section 6.01.

B. All traffic devices, signs, pavement markings or traffic loops disturbed, damaged, altered or removed by the Permittee shall be promptly replaced by the Permittee, unless otherwise directed by BTD, in accordance with the BTD and the State of Massachusetts Rules and Specifications. Street markings (centerlines, crosswalks, stop bars, lane markings, etc.) and traffic loops must be replaced no later than (72) seventy-two hours after completion of work, or as directed by the BTD. If work disturbs centerlines or lane markings on arterial/ collector streets the Permittee shall, and has the duty and obligation to, place reflective markers immediately after temporary pavement is placed. The cost including incidental items used in making all repairs such as tack coat, crack seal, towing, and police details, are the sole responsibility of the Permittee.

C. All traffic control signs (i.e. STOP, YIELD, DO NOT ENTER, ONE WAY, NO PARKING, SPEED LIMIT, CURVE WARNINGS, etc.) approved by the BTD for removal, relocation, replacement, etc. must be immediately replaced by the Permittee, unless otherwise directed by the BTD. No such traffic control sign shall be removed, relocated or replaced without approval from the BTD.

D. The Permittee shall install temporary pavement consisting of hot-mixed asphalt upon completion of backfilling operations. The Permittee shall take all reasonable measure to completely install temporary paving on the same day excavation occurs. If same day paving is not achievable due to complexity of work, emergency, or unpreventable conditions, the Permittee must notify the BPWD immediately and take appropriate measures to protect the public safety and infrastructure until work recommences. The most stringent measures shall be required on arterial/collector streets. Same day paving is required if work is not expected to be continued the next day, regardless of location.

E. All temporary pavement shall be meet MHD M3.11.00 Class I Bituminous Concrete or MHD 9.5mm Superpave hot mix asphalt placed in (2) two compacted lifts each having a depth of (1½") one-and-one-half inches resulting in a total depth of (3") three inches.

F. Any bar holes made in the street or sidewalk of any public way shall immediately be filled with compacted, granular material up to (3") three inches below the paved surface with the remaining (3") three inches filled with an approved asphalt or concrete plug.

G. The Permittee is responsible to repair cave-outs and undermined areas of a trench prior to paving as defined in Section 4.02(A). The full perimeter of this opening shall be cut square to the full depth of the existing pavement. All edges shall be vertical and clean of debris. A tack coat shall be painted to the pavement sidewalls of the entire excavation to prevent water infiltration.

H. **Hot-mixed asphalt paving of trenches of over (100') one hundred feet in length shall be paver-applied, unless otherwise authorized by the BPWD.**

I. If emergency repairs are completed when hot mix asphalt plants are closed, the Permittee may use Modified cold patch or Modified Winter Stockpile mix (see Appendix A). The Permittee is required to maintain the repair with Modified cold patch or Modified Winter Patching Material to the satisfaction of the BPWD until hot mix asphalt is available. When hot mix asphalt becomes available the Permittee is required to remove all Modified cold patch or Modified Winter Patching Material and perform the Temporary Repair as described in Section 5.10.

J. Temporary paving shall be uniform, smooth and level to the adjacent surface.

Sec. 5.05 Temporary Restoration of Sidewalk/Walkways/Driveways (Con't)

K. **The Permittee shall be responsible for the proper placement and maintenance of the temporary pavement. The Permittee is required to keep the temporary sidewalk in acceptable condition for up to (60) sixty days, and then perform the permanent repair.**

L. **All repairs must fully comply with ADA and AAB standards**. Any repairs found to be in violation of ADA or AAB standards become the sole responsibility of the Permittee.

M. The Permittee is required to **maintain a compliant temporary pedestrian passageway, including signage, around the construction** area according to ADA and AAB standards. The Permittee must maintain safe, unobstructed vehicular traffic throughout construction.

N. If the sidewalk is to be closed at any time, the Permittee must provide (2) two ***MUTCD R9-10*** "Sidewalk Closed – Use Other Side" signs on either side of the site at the nearest intersecting street corners. All signs must conform to the MUTCD (Manual on Uniform Control Devices) requirements.

O. All temporary sidewalk repairs shall have cross slopes adhering to ADA and AAB standards. The preferred cross slope is 1.5%. **In no instance shall the sidewalk cross slope exceed 2%.**

P. Whenever sidewalks, walkways, or curbs on a street are constructed, reconstructed, or repaired, a curb cut and pedestrian ramp must be constructed. A pedestrian ramp is required whenever a sidewalk crosses a curb into a street.

Q. Pedestrian ramps shall have slopes adhering to ADA and AAB standards. The preferred ramp slope and side slope is 7.5%. **In no instance shall the ramp or side slope exceed 8.3% (1/12").**

R. A level landing of (48") forty-eight inches in length shall be provided at the top of the pedestrian ramp. The width of the landing shall be the same as the width of the curb cut. The preferred landing dimensions shall be (48"X48") forty-eight inches by forty-eight inches. The slope of the landing shall not exceed 2% (1/50") in any direction.

S. Appendix E contains the Mass Highway Construction and Traffic Standard Details section regarding pedestrian ramps and should be referred to when constructing pedestrian ramps.

Sec. 5.06 Permanent Restoration of Sidewalks/Walkways/Driveways

The Permanent restoration of sidewalk, walkways and/or driveways is the responsibility of the Permittee. The Permanent Restoration must be completed ***no later than (60) thirty days*** after completion of any Temporary Restoration. At the Permittees discretion, the Permanent Restoration can take place immediately after backfilling operations without any Temporary Restoration. ***The Permittee shall not be allowed to perform the Permanent Sidewalk Restoration during the winter moratorium period, November 15th and April 15th, unless otherwise stated by the BPWD.***

A. **On streets where curb-to-curb resurfacing occurs, the Permittee will be required to install or reconstruct compliant pedestrian ramps at all corners and within the limits of the work to current ADA and AAB regulations.**

B. The Permittee shall notify the BPWD before backfilling any excavation, allowing adequate time for inspection by the BPWD's Construction Inspection Unit (CIU) as outlined in Section 6.01.

C. All traffic devices, signs, pavement markings or traffic loops disturbed, damaged, altered or removed by the Permittee shall be promptly replaced by the Permittee, unless otherwise directed by BTD, in accordance with the BTD and the State of Massachusetts Rules and Specifications. Street markings (centerlines, crosswalks, stop bars, lane markings, etc.) and traffic loops must be replaced no later than (72) seventy-two hours after completion of work, or as directed by the BTD. If work disturbs centerlines or lane markings on arterial/ collector streets the Permittee shall, and has the duty and obligation to, place reflective markers immediately after temporary pavement is placed. The cost including incidental items used in making all repairs such as tack coat, crack seal, towing, and police details, are the sole responsibility of the Permittee.

D. All traffic control signs (i.e. STOP, YIELD, DO NOT ENTER, ONE WAY, NO PARKING, SPEED LIMIT, CURVE WARNINGS, etc.) approved by the BTD for removal, relocation, replacement, etc. must be immediately replaced by the Permittee, unless otherwise directed by the BTD. No such traffic control sign shall be removed, relocated or replaced without approval from the BTD.

E. The Permittee shall be required to restore the area(s) bounded by the dimensions described in Section 4.02 to minimize the effects of excavation.

F. The Permittee promptly install the permanent restoration in accordance with the BPWD's Rules and Specifications or in a manner as prescribed by the BPWD for special conditions.

G. It shall be the responsibility of the Permittee to perform the necessary restoration beyond the limits of the pavement. This shall include, but shall not be limited to, restoration of lawns, shrubs, gardens, curbing, underdrain, fabrics, fences, walls, signage, etc.

H. If **any** portion of an existing Pedestrian ramp is disturbed by construction, the Permittee shall be required to reconstruct the Pedestrian ramp to current ADA and AAB regulations. All costs of reconstruction of the Pedestrian ramp are the responsibility of the Permittee.

I. All work, operations, and activities shall be performed in a manner that shall leave any lawn, garden, or grassy area clean of debris and in the same condition that existed before the work began. The Permittee shall not remove, even temporarily, any trees or shrubs without first obtaining the consent of the Boston Parks Department.

J. The Permittee shall notify the BPWD in writing or email regarding the completion of any permanent restoration or repair, setting forth the date of completion. The notification should include the permit number and completion date.

Sec. 5.06 Permanent Restoration of Sidewalks/Walkways/Driveways (Cont'd)

K. The Permittee shall, and has the duty and responsibility to, guarantee the workmanship of the permanent restoration of any sidewalk, driveway, curb, esplanade, and lawn area for a period of (3) three years. The Permittee is required to establish a healthy (90%) ninety percent grass growth through (2) two consecutive mowing of any esplanade or lawn repair. The BPWD strongly recommends that the Permittee photograph and date any horticultural restorations and healthy grass growth after (2) two mowing, and submit this documentation to the BPWD.

L. The BPWD may require the permanent sidewalk repair to consist of the furnishing and laying of brick paving bonded with mortar on a concrete base. All brick for sidewalks shall be placed in a (1") one-inch bed of mortar. The mortar shall be placed on top of a concrete base, varying in thickness from (3"-5") three to five inches. The concrete base shall have a gravel sub-base, a minimum of (6") six inches deep, adequately compacted and placed as described in these Rules and Regulations.

M. The BPWD may require the permanent sidewalk repair to consist of the furnishing and laying of brick paving on a stone dust setting bed. Stone dust setting beds must be laid on a properly leveled and compacted gravel sub-base. Any bricks considered salvageable by the BPWD shall be carefully removed, cleaned and reused. New bricks shall be required to supplement missing and unsalvageable bricks. When the salvaged brick supply has been exhausted, new brick shall be required to complete the work and shall be installed in the same manner as the used brick. New and used brick shall be interspersed in so far as practical.

N. The BPWD may require the permanent sidewalk repair to consist of the furnishing and laying of brick paving on a bituminous concrete base. All laid bricks shall have hand-tight butt joints swept with a sand/cement mix on top of mastic adhesive. All laid bricks must be placed on a sub-base of dense grade bituminous concrete top course over a bituminous concrete binder course, which is placed over a gravel base course to the required lines and grades as requested by the BPWD.

O. **All repairs must fully comply with ADA and AAB standards**. Any repairs found to be in violation of ADA or AAB standards become the sole responsibility of the Permittee.

P. The Permittee is required to **maintain a compliant temporary pedestrian passageway, including signage, around the construction** area according to ADA and AAB standards. The Permittee must maintain safe, unobstructed vehicular traffic throughout construction.

Q. If the sidewalk is to be closed at any time, the Permittee must provide (2) two ***MUTCD R9-10*** "Sidewalk Closed – Use Other Side" signs on either side of the site at the nearest intersecting street corners. All signs must conform to the MUTCD (Manual on Uniform Control Devices) requirements.

R. All permanent sidewalk repairs shall have cross slopes adhering to ADA and AAB standards. The preferred cross slope is 1.5%. **In no instance shall the sidewalk cross slope exceed 2%.**

S. Whenever sidewalks, walkways, or curbs on a street are constructed, reconstructed, or repaired, a curb cut and pedestrian ramp must be constructed. A pedestrian ramp is required whenever a sidewalk crosses a curb into a street.

T. Pedestrian ramps shall have slopes adhering to ADA and AAB standards. The preferred ramp slope and side slope is 7.5%. **In no instance shall the ramp or side slope exceed 8.3% (1/12").**

U. A level landing of (48") forty-eight inches in length shall be provided at the top of the pedestrian ramp. The width of the landing shall be the same as the width of the curb cut. The preferred landing dimensions shall be (48"X48") forty-eight inches by forty-eight inches. The slope of the landing shall not exceed 2% (1/50") in any direction.

V. **Appendix E contains the Mass Highway Construction and Traffic Standard Details section regarding pedestrian ramps and should be referred to for any construction issues.**

Sec. 5.07 Material Specifications: SIDEWALK

A. Gravel for sub-base shall conform to the requirements of Section 5.03 of the BPWD's Standard Specifications with the exception that all material shall pass a (¼") one-quarter-inch sieve. Gravel material installed for sidewalk and/or driveway base shall be either "MHD M1.03.1 Processed Gravel for sub-base" or a City of Boston approved Recycled Backfill Material, compacted to no less than 95% of the maximum dry density of the processed gravel materials, ASTM D1557, to the depth required by the BPWD's Rules and Specifications.

B. Concrete shall be air entrained, 4000 psi, and (¾") three-quarter-inch maximum size aggregate with 660 lbs of cement per cubic yard of concrete. Entrained air shall be between 5.5% and 7.5% with a slump not to exceed (4½") four-and-one-half inches. ASTM C150 Type 11 cement shall be used. The use of mineral additives or supplements such as Ground Granulated Blast Furnace Slag, Fly Ash, Silica Fume or Micro Silica is prohibited. Normal weight aggregate shall conform to ASTM C33, containing no deleterious substances, which cause surface spalling. The Permittee must certify that no alkali reactivity is produced with the proposed aggregate-cement combinations when tested in accordance with ASTM C227.

    1. All concrete shall be produced in accordance with the approved mix designs. The Permittee shall comply with ACI 304 and 309 as herein specified.

    2. The Permittee shall be allowed to add water for slump adjustment, but is required to adhere to the standards of ASTM C94. This standard allows for slump adjustment on site if the truck arrives with a concrete slump less than (4½") four-and-one-half inches. This shall only be allowed if the following conditions are satisfied:

        a. The water addition shall not increase the water cement ratio above the maximum permitted by the specification.

        b. The water shall be added to the entire batch, not in the middle or end of the batch.

        c. Water addition is not allowed to by-pass the 1½ hour or 300 revolution criteria.

        d. Water shall be added into the batch at the head section of the drum or by injection into the head and discharge section of the drum.

        e. Water added requires an additional 30 revolutions at mixing speed.

        f. The driver's delivery ticket shall document any water withheld at the batching plant.

C. Concrete with a slump exceeding (4½") four-and-one-half inches, air entrainment outside of the allowable range, or of a temperature exceeding (90°F) ninety degrees Fahrenheit is not to be installed. All concrete must be placed within 90 minutes of when it was batched as recorded on the delivery slip. The 90 minutes can be exceeded only if the concrete remains workable, there is no appreciable loss of slump, no water has been added, or the temperature does not exceed (90°F) ninety degrees Fahrenheit.

D. Concrete Mix Designs

    1. Substantiating data for each concrete mix design to be installed must be submitted to the BPWD not less than (6) six weeks prior to the first placement of concrete. Data for each mix shall at a minimum include the following:

        a. Mix identification designation (unique for each mix)

        b. Statement of intended use.

        c. Mix proportions, including all admixtures.

d. Manufacturer's data and/or certifications verifying conformance of all mix, materials, including admixtures with specified requirements.

e. Wet and dry unit weights.

f. Entrained air content, ASTM C138.

g. Design slump, ASTM C143.

h. Required average strength qualifications data per ACI 301-391and 392. Submit separate qualification for each production facility that will supply concrete to the project.

E. New Brick Sidewalk on Concrete Base with Mortar Joints

1. New Brick shall conform to the standards set forth by the Boston Public Works Engineering Division.

   a. **All bricks shall be for exterior horizontal paving and wire cut type.**

   b. All bricks shall be delivered to the site on pallets in packages with wax surfaces protected by paper separators or facing each other. Waxed bricks shall be stored in a location protected from the sun.

2. Masonry sand shall be clean, cashed, and uniformly well graded. Masonry sand must conform to the requirements of ASTM Specification C-144-70 with the further requirement that the fineness modulus shall be maintained at 2.25 plus/minus 0.10. Sand shall be from a single source meeting these requirements and as approved by the BPWD after laboratory testing. The source of supply shall not be changed during the course of job without written consent of the BPWD.

3. Colorant shall be of a type and quality that shall not adversely affect workability, setting, or strength of the bond and shall be compatible with the latex-bonding agent employed. The color shall be chemically inert, non-fading, alkali fast mineral oxides finely ground and specially prepared for use in cement mortar.

4. The latex-bonding agent shall be non-re-emulsifiable in the presence of moisture and shall contain less that 50% internally plasticized solids. It shall be similar and equal to Laticrete, and used in accordance with manufacturer's instructions. Laticrete 43701 is a grout and mortar admixture manufactured by Laticrete International, Woodbridge, Connecticut.

5. Preformed joint filler shall be non-extruding, resilient, non-bituminous, and shall conform to AASHO-M153.65 Type II for Standard Cork Filler.

6. Joint sealer shall be one part moisture-cured, non-sag, polyurethane sealant which meets or exceeds Federal Specification TT-S00230c, Type II, Class A. Sealant shall be similar to Sikaflex-la as manufactured by Sika Chemical Corp, Lyndhurst, NJ, or an approved equal.

7. Compressible filler shall be installed along the perimeter of brick paving and as directed by the BPWD. The filler shall be preformed, closed-cell foam polyethylene, sponge rubber and of proper thickness to be under compression, (3/8") three eighths inch thick, and shall be kept (1") one inch below the top of the brick paving to allow for caulking.

8. Concrete for base course shall conform to these Rules and Specifications, and to the requirements of M4.02.00 for Class C cement concrete.

9. Prior to ordering materials the Permittee shall submit for BPWD approval samples of brick and masonry accessories. Samples of other materials to be used and samples for testing shall be submitted as requested by the BPWD. Bricks shall be submitted in whole straps or panels to show color range and texture. Before construction begins a sample panel of at least (25) twenty-five bricks shall be laid as a job site panel to be retained for reference until the project is accepted by the BPWD.

10. All materials shall be delivered, stored, and handled to protect them from wetting, staining, snipping, or other damage. Cement and similar perishable materials shall be stored in watertight sheds with elevated floors. Bricks shall be stored off the ground and under watertight covers. Any material showing evidence of water or other damage shall be rejected by the BPWD.

F. New Brick Sidewalk on Stone Dust Setting Bed

1. New Brick shall conform to the standards set forth by the Boston Public Works Engineering Division.

    a. **All bricks shall be for exterior horizontal paving and wire cut type.**

    b. All bricks shall be delivered to the site on pallets in packages with wax surfaces protected by paper separators or facing each other. Waxed bricks shall be stored in a location protected from the sun.

2. Stone dust shall consist of inert materials that are hard, durable stone free from surface coating and deleterious materials. Graduation requirements shall be as follows:

SIZE OF SIEVE	MINIMUM PERCENT PASSED BY WEIGHT
#4	100
#8	96
#16	68
#30	43
#50	29
#100	17
#200	11

G. New Brick Sidewalk on Bituminous Concrete Setting Bed

1. New Brick shall conform to the standards set forth by the Boston Public Works Engineering Division.

    a. **All bricks shall be for exterior horizontal paving and wire cut type**.

    b. All bricks shall be delivered to the site on pallets in packages with wax surfaces protected by paper separators or facing each other. Waxed bricks shall be stored in a location protected from the sun.

2. A Majestic Adhesive shall be required, and shall consist of (2%) two percent neoprene (grade WM1) oxidized asphalt with 155 degrees Fahrenheit softening point (80% penetration) and (10%) ten percent long fibered asbestos.

3. Asphalt cement shall conform to these Specifications, and to ASTM D 946 penetration grade 85-100. All sand shall be clean, hard sand with durable particles uniformly graded from coarse to fine, and all passing the No. 4 sieve and conforming to ASTM C 144. The asphalt cement and sand shall be mixed at an asphalt plant in the proportion of (7%) seven percent asphalt cement and (93%) ninety-three percent sand. The mix shall be heated to 300 degrees Fahrenheit.

Sec. 5.08 Methods of Construction: SIDEWALK

A. Workmanship

1. The Permittee is required to furnish all materials and shall be responsible for the job to be executed in an orderly, timely, quality-controlled manner utilizing proper workmanship and construction techniques conducted in accordance with industry standards for the successful completion of the work, backfilling, appurtenant restorations, and pavement repair.

2. The Permittee shall keep a competent foreman overseeing sufficient competent employees to perform the work with all proper speed in accordance with the requirements of the law, other public authorities, and to the reasonable satisfaction of the BPWD.

3. The Permittee shall conduct the work in such a manner as not to unreasonably interfere with other work being done by the BPWD, by contract or otherwise. As deemed necessary by the BPWD, the work done under these specifications shall conform to the progress of said other work. The Permittee shall cooperate with the contractors or employees who may be doing work for the BPWD, and with public service corporations affected by the work, in arranging for storage places, temporary support for structures, repairs, etc.

   All entities working within the City of Boston must arrange to allow access for planned street cleaning, trash and recycling collection. All construction must be coordinated to avoid conflict with these activities. Information on sanitation and street sweeping schedules can be found on the Public Works web page or call the Sanitation Office at (617) 635-7573.

4. The Permittee must maintain all temporary repairs until the permanent repair has been made.

5. Failure of the Permittee to meet these obligations may result in the suspension of the Permit, and/or project shutdown until corrected to the reasonable satisfaction of the BPWD and the CIU.

B. Length of Trench Opening

1. The maximum permissible length of open trench at any time shall be (200') two hundred feet, and no greater length shall be opened for pavement removal, excavation, construction, backfilling, repairing or any other operation without written permission of the BPWD/BTD.

M.G.L. Chapter 82A "Jackie's Law" shall encompass any excavation which is narrow in relation to its length, made below the surface ground in excess of 3 feet below grade and the depth of which is, in general, greater than the width, but the width of the trench, as measured at the bottom, is no greater than 15 feet.

C. Placement of backfill material

1. All backfill material must be either approved uniform "MHD M1.03.1 Processed Gravel for sub-base", or a City of Boston approved Recycled Backfill Material.

2. The backfill material shall be spread and compacted in layers ***not exceeding (8") eight inches in loose depth.***

3. No excavated pavement shall be used or mixed with any backfill material.

4. The Permittee shall install sub-base for cement concrete replacement of sidewalks whenever the existing sub-grade is low.

Sec. 5.08 Methods of Construction: SIDEWALK (Con't)

D. Castings and Substructures

1. No person or utility shall without written permission from the BPWD install any substructure other than manholes, valve castings, culverts, or catch basins at a vertical distance less than that required by the City of Boston.

2. Nothing in this section shall impose a duty upon the Permittee to maintain the specifications as required herein upon subsequent changes of grade in the surface, unless the grade in the substructure interferes with the maintenance of or travel on a public right-of-way.

E. Portland Cement Concrete Sidewalk or Driveway's

1. Sufficiently compacted gravel shall be placed upon the sub-grade so that the top of the gravel shall be (4") four inches for sidewalks and (6") six inches for driveways below and parallel to the proposed finished surface.

2. All forms shall conform to the various subsections of the specifications listed below.

    a. The forms for Portland Concrete Cement (PCC) shall be smooth, free from warp, of sufficient strength to resist springing out of shape, and of a depth to conform to the thickness of the proposed walk.

    b. All mortar and dirt shall be completely removed from the forms that have been previously used.

    c. The forms shall be well staked, thoroughly braced, and set to the established lines with their upper edge conforming to the grade of the finished walk. The finished walk shall have sufficient pitch from the outside to the edge of the walk providing adequate surface drainage at a rate of (¼") one-quarter inch per foot, unless otherwise directed by the BPWD.

    d. Before concrete is placed for PAC sidewalks and driveways ***the sub-grade shall be thoroughly dampened so that it is moist throughout, but without puddles of water.***

    e. The concrete shall be placed as near to its final position as possible with precautions taken not to overwork the concrete while it is still fluid.

    f. The concrete shall be thoroughly spaded along the forms, or screeded to eliminate voids or honeycombs at the edges.

    g. All concrete slabs shall be (30') thirty feet in length and separated by (¼") one-quarter inch preformed transverse expansion joints, unless otherwise directed by the BPWD. Preformed expansion joint filler shall be placed adjacent to or around existing structures and as directed by the BPWD.

Sec. 5.08 Methods of Construction: SIDEWALK (Con't)

3. Concrete shall be laid on the sub-base, specified above, and shall conform to the various subsections of the specifications listed below.

    a. The concrete shall be thoroughly consolidated in place over an approved sub-base. It shall be (4") four inches in depth for PCC sidewalks and (6") six inches in depth for PCC driveways. The PCC for sidewalks and driveways shall be worked and floated so as to give a smooth, uniform and attractive surface finish. In conveying the concrete from the place of mixing to the place of deposit, the operation must be conducted in such a manner that no mortar shall be lost, and the concrete must be handled so that the concrete remains of uniform composition exhibiting neither excess, nor lack of, mortar in any one place. The concrete materials shall be mixed to produce a consistency where the water shall flush to the surface under heavy tamping. Revamping of the concrete shall not be permitted. The application of neat cement to the surface in order to hasten hardening is prohibited. Inspection and testing of cast-in-place concrete work, either at the plant or in the field, shall be performed by, and at the discretion of, the BPWD. Such inspection and testing shall not relieve the Permittee of his responsibility to provide his own quality control as necessary to furnish materials and workmanship in accordance with requirements of these Rules and Specifications.

    b. The material shall adhere to the surface and make a tight bond with the concrete, but shall have a fugitive dye. The compound shall form a uniform, continuous coherent film that shall not check, crack, or peel and shall be free from pinholes or any other imperfections. Whenever the temperature is (90°F) ninety degrees Fahrenheit or more, the BPWD shall have the right to require a second application of compound at no additional expense to the City of Boston. Any section damaged by rain, or in any other way, before the compound has dried to a stable coating shall be retreated by the contractor at no additional expense to the City of Boston. The concrete surface to which compound has been applied shall be protected for a period of at least (3) three days. All vehicular and pedestrian traffic shall be considered detrimental to the film of applied compound and shall be prohibited. Any damage to the film in the (3) three-day period shall be promptly repaired by reapplication of the compound at no additional cost to the City of Boston.

    c. Adequate protection must be provided when temperatures of (40°F) forty degrees Fahrenheit or lower occur during the placing of concrete, and during the early curing period. The minimum temperature of fresh concrete after placement, and for the first (3) three days shall be maintained above (55°F) fifty-five degrees Fahrenheit. An additional (3) three days of protection from freezing shall be maintained if required

    d. The Permittee shall make every effort to protect the newly poured concrete surface against vandalism, marking, or defacing and must stand ready to replace any blocks which, in the opinion of the BPWD, are excessively marked or defaced without any additional cost compensation to the Permittee from the City of Boston.

4. Concrete shall be finished and shall conform to the various subsections of the specifications listed below.

    a. The finishing of the concrete surface shall be performed by experienced and competent cement finishers. Pre-formed (¼") one-quarter inch expansion joint filler shall be used in the transverse expansion joints for a PCC sidewalk, and the joints shall conform to the requirements of AASHTO designation M-33, Type 2 liquid membrane-forming compounds for curing that shall be used in accordance with ASTM designation C-15 designation M148-57, or the latest revisions. The concrete surface shall be stuck off to the required elevation and cross-section, followed by the roller, and then leveled with a bull float, or scrape the minimum if necessary to remove irregularities. No finishing operation shall be performed while free water is present. Finishing operations shall be delayed until all bleed water and water sheen has left the surface and the concrete has begun to stiffen. All joints shall be round and cut to a minimum of one-quarter of the concrete depth. Concrete shall be finished utilizing a steel trowel with all finishing to be done by hand. After tooling, the surface shall be brushed by drawing a soft-bristled push broom with a long handle over the surface of the concrete to produce a non-slip surface.

    b. Type 2 pigmented liquid membrane-forming curing compound shall be applied immediately following final finishing, and before any marked dehydration of the concrete or surface checking occurs. The compound shall be applied in one or two applications as directed by the BPWD. When the compound is applied in two applications the second shall follow the first within (30) thirty minutes. The compound shall be applied in a continuous film by means of power-operated pressure spraying equipment at a rate not less than (1) one gallon per (200') two hundred square feet of surface. Sufficient pressure shall be applied to the spray machine to force the compound to leave the nozzle as a fine spray.

F. New Brick Sidewalk on Concrete Base with Mortar Joints

1. The cement concrete base shall have a depth of (3"-5") three to five inches of cement concrete, and shall be constructed on a gravel sub-base and rough finished true, uniform, parallel with and (3") three inches below the surface of the finished brick paved areas. Expansion joints in the slab shall be located as shown on the plans, or where directed by the BPWD. All joints shall be located no more than (16') sixteen feet apart and shall correspond to joints in the overlaying brick paving.

2. Mortar for all joints between bricks shall be mixed to a reasonably stiff consistency, and shall consist of (1) one part Portland cement and (2½) two-and-a-half parts dry sand. To this there shall be added the latex bonding agent at the rate of not less than (1) one gallon to (1) one bag of Portland cement. The use of lime is prohibited. Mortar for exposed joints shall also contain the colorant herein specified, if colorant is required. The colorant shall not be used in excess of (7%) seven percent by weight of cement.

3. All masonry shall be laid by skilled workmen under adequate supervision, and shall be laid true to lines and levels referred to in these Rules and Specifications. Masonry work shall not be laid in temperatures below (40°F) forty degrees Fahrenheit unless provisions are made to adequately protect the masonry materials and the finished work from frost by heating materials, enclosing the work, or heating the enclosed spaces and contact surfaces. All masonry materials used in freezing weather shall maintain a temperature between (50°F-90°F) fifty and ninety degrees Fahrenheit. The masonry shall be protected against freezing for a minimum of (48) forty-eight hours after being installed. Anti-Freezing admixtures shall not be allowed in the mortar. Frozen work shall not be built upon. Any completed work found to be affected by the frost must be taken apart and rebuilt at the Permittees expense.

Sec. 5.08 Methods of Construction: SIDEWALK (Con't)

4. The brick paving shall be installed to provide adequate drainage at all points. If any condition is encountered when drainage is questionable the Contractor shall notify the BPWD and suspend work until the BPWD responds. If the BPWD determines that the drainage on newly laid brick is inadequate, the area in question shall be taken apart and rebuilt at the Permittees expense.

5. After the excavation has been completed, the sub-grace fine graded, the gravel sub base placed, fine graded and compacted, and the concrete base-slabs constructed, and before commencing the work of brick paving, the slabs shall be thoroughly cleaned of all dust, dirt, and foreign matter. Coursing shall be laid out so that end conditions of bricks shall not have to be cut to a length of less than (1½") one-and-one-half inches. The bricks shall have a low rate of suction at the time they are laid. The brick shall not gain more than a maximum of (20g) twenty grams in weight when placed in (1/8") one-eighth inch of water for (1) one minute, and the slab shall be thoroughly saturated with water and the top surface of the slab shall be dry before starting to lay any bricks.

6. Bricks shall be laid in a full setting bed of mortar at the proper level with the un-sanded, waxed side up. The back of each pre-wetted brick shall be coated with a mixture of cement and Laticrete 13701 latex (Laticrete shall be mixed with water in a 1:1 ratio), or approved equal, and set the brick into the freshly installed mud setting bed, tamping the-brick level and true. Leveling of the brick should be done as the setting operation proceeds so that it is not necessary to disturb the bricks set earlier. Grouting should not be applied for a minimum of (24) twenty-four hours, or until the under bed sets and hardens. All un-grouted brick areas shall be protected from pedestrian traffic.

7. All joints shall be solidly filled to the full depth with mortar, which has the colorant added if specified, points shall be a nominal (5/16"-3/8") five-sixteenth inch to three-eighth inch wide. Proper care shall be taken not to place mortar on adjoining brick, cut stone, or any other surface.

8. After the initial set of mortar, joints shall be finished by tooling with a (1") one-inch diameter non-staining jointer (a hard maple jointer would be preferred) to produce a very slightly concave polished joint free from drying cracks. After installation, the joints shall be cured for at least (5) five days by covering with curing paper or other approved material. When the joints have been cured, the wax shall be removed with high-pressure steam. Care shall be taken not to damage mortar by overheating any area.

9. The Permittee shall be responsible for closing off all traffic to avoid damage to the area until the mortar has set.

10. If the continuity of the work is suspended, the Permittee shall terminate his paving against temporary wood blocking. The bricks along this blocking shall be set in sand so as to allow removal and toothing of the bricks in the work to be later continued. All exposed brick surfaces shall be thoroughly cleaned with a solution of soap and water using stiff fiber brushes. In some cases the area shall be wetted with a (5%) five percent solution of muriatic (hydrochloric) acid, which shall be preceded and followed by a copious bath of fresh clean water.

11. All imperfect or frozen mortar joints shall be raked out to a depth of (3/8") three-eighth inch and reappointed as directed by the BPWD at the Permittees expense. The entire project must be left in perfect condition, clean and free from all blemishes.

12. All brick that requires installation in a radial pattern shall be saw cut to have a uniform (3/8") three-eighth inch joint.

13. Work around and adjacent to existing trees shall be done exercising special care where roots are present. Excavation around roots of trees to remain shall be done entirely by hand. Roots over (1″) one inch in diameter shall be cut neatly and left unpainted. Exposed roots shall not be left to the heat of the sun or freeze in the cold but shall be promptly covered and protected. In no case shall more than (1/3) one third of the total root structure be disturbed or cut without approval of an Arborist. All work to protect roots shall be considered incidental to this item.

14. The forming of any and all tree pits shall be considered incidental work with no additional compensation due to the Permittee.

G. New Brick Sidewalk on Stone Dust Setting Bed

1. In the areas to be repaired, the Permittee shall remove only the existing brick designated by the BPWD. The sub-base shall be compacted and prepared parallel to, and compacted to, (2″) two inches at a minimum, plus the thickness of a brick below the finished surface. A layer of stone dust, a minimum of (2″) two inches in depth, shall be spread on the properly compacted sub-base. Special care shall be taken to make the surface of the stone dust is parallel to the finished grade of the sidewalk. The stone dust shall be rolled, tamped, and sprinkled with water to form a compacted layer of sufficient thickness, (2") two-inch minimum, to bring the bricks to the proper grade and slope when rammed firm.

2. The cracks shall be laid to match the existing brick pattern with hand-tight butt-prints. A plank covering several courses shall be placed upon the bricks and carefully rammed with a heavy rammer until the bricks reach a firm, unyielding bed, and present a surface at the proper grade and slope. Any divergence from line and grade is to be corrected by removing and relaying the bricks.

3. After bricks are rammed in place, stone dust shall be swept into all joints until they are completely filled and then a light fog of water shall be applied to the entire area. This process shall be repeated a minimum of (3) three times, or until joints are compacted and full. All surplus stone dust remaining on the sidewalk shall be removed carefully by sweeping. Care shall be taken to avoid raking out the joints during the removal of the stone dust. All fitted pieces of brick shall be saw cut no smaller than (2"x3″) two inches wide by three inches long.

4. Work around and adjacent to existing trees shall be done exercising special care where roots are present. Excavation around roots of trees to remain shall be done entirely by hand. Roots over (1″) one inch in diameter shall be cut neatly and left unpainted. Exposed roots shall not be left to the heat of the sun or freeze in the cold but shall be promptly covered and protected. In no case shall more than (1/3) one third of the total root structure be disturbed or cut without approval of an Arborist. All work to protect roots shall be considered incidental to this item.

5. The forming of any and all tree pits shall be considered incidental work with no additional compensation due to the Permittee.

H. New Brick Sidewalk on Bituminous Concrete Setting Bed

1. The bituminous concrete base shall have a depth of (3″-5″) three to five inches as directed by the BPWD, and shall be constructed on a gravel sub-base and rough finished true, uniform, parallel with and (3″) three inches below the surface of the finished brick paved areas.

2. The top course of bituminous concrete shall be swept clean before installation of any brick. (3/4″) Three-quarter inch bars shall be set, with shims as necessary, to the proper grade. A sand asphalt mixture shall be spread with a striking board pulled over the control bars several times. Fresh sand asphalt shall be applied over low spots until a smooth, firm and even setting bed is achieved. The area shall be rolled while still hot with a light steel roller to the required final surface depth.

Sec. 5.08 Methods of Construction: SIDEWALK (Con't)

3. All masonry shall be laid by skilled workmen under adequate supervision, and shall be laid true to lines and levels referred to in these Rules and Specifications. Masonry work shall not be laid in temperatures below (40°F) forty degrees Fahrenheit unless provisions are made to adequately protect the masonry materials and the finished work from frost by heating materials, enclosing the work, or heating the enclosed spaces and contact surfaces. All masonry materials used in freezing weather shall maintain a temperature between (50°F-90°F) fifty and ninety degrees Fahrenheit. The masonry shall be protected against freezing for a minimum of (48) forty-eight hours after being installed. Anti-Freezing admixtures shall not be allowed in the mortar. Frozen work shall not be built upon. Any completed work found to be affected by the frost must be taken apart and rebuilt at the Permittees expense.

4. The brick paving shall be installed to provide adequate drainage at all points. If any condition is encountered when drainage is questionable, the Contractor shall notify the BPWD and suspend work until the BPWD responds. If the BPWD determines that the drainage on the newly laid brick is inadequate, the area in question shall be taken apart and rebuilt at the Permittees expense.

5. All bricks shall be cut to provide adequate butt joints with parallel brick edges. No brick shall be used that is smaller than one-half size in any dimension for any cut pieces.

6. Asphalt mastic adhesive shall be applied to the sand asphalt setting bed using a trowel with (1/16") one-sixteenth inch serrations.

7. If any settlement occurs that produces a mismatch of (1/16") one sixteenth of an inch at the interface between brick pavements and other pavements prior to final acceptance, bricks shall be relayed near the interface to provide a smooth transition between the brick and adjacent surfaces.

8. Any joints between bricks shall be filled with a (4:1) four to one sand to cement mix swept into said joints until completely filled. The joints shall be lightly fogged with water to compact the mix into the joints. This process shall be repeated until all joints are compacted and filled.

9. All stains shall be cleaned immediately by Steam Jenny with a capacity of (150) one hundred fifty gallons per hour, at 120 psi, and a coil temperature of 325 degrees Fahrenheit.

10. Work around and adjacent to existing trees shall be done exercising special care where roots are present. Excavation around roots of trees to remain shall be done entirely by hand. Roots over (1") one inch in diameter shall be cut neatly and left unpainted. Exposed roots shall not be left to the heat of the sun or freeze in the cold but shall be promptly covered and protected. In no case shall more than (1/3) one third of the total root structure be disturbed or cut without approval of an Arborist. All work to protect roots shall be considered incidental to this item.

11. The forming of any and all tree pits shall be considered incidental work with no additional compensation due to the Permittee.

I. Loam shall conform to MHD Standard Specification Section M.1.07.0 "Topsoil and Plantable Soil Borrow". Loam shall have a minimum finished depth of (6") six inches

J. Seeding shall conform to MHD Standard Specification Section M.6.03 or as required by the BPWD. Permittees shall be required to continually seed areas of loam with seed until a satisfactory growth of grass is established as determined by the BPWD

K. If subsequent testing on hardened concrete by the owner shows that the concrete does not meet the specification requirements, the contractor shall in addition to being responsible to replace any material or workmanship which is rejected, shall also be responsible for the cost of the testing.

Sec. 5.09 Special Condition(s)

A. Geofabric Material

1. If an excavation cuts through an area that has been constructed with Geofabrics, the following restoration procedures shall be strictly followed:

    a. A fabric replacement piece that has similar properties as that of the damaged fabric must be used. The most important property is that of the 0_{95} Sieve Test, which has an opening allowing (5%) five percent of the glass beads to pass through when sieved (ASTM D4751-87).

    b. The trench walls must be cut a minimum of (4") four inches in the area of Geofabric replacement with every precaution taken so as not to disturb the exposed fabric. A minimum of a (4") four-inch overlap of new fabric is required. Soil migration in this seam area shall not be allowed. The seam width shall increase if the sub-grade is determined to be very soft. If a soft sub-grade exists and the trench lies directly beneath a wheel-path, the seam width shall increase to (12") twelve inches.

    c. Seams shall be sewn or stapled in accordance with manufacturer's recommendation. If sewn, the Permittee shall use colored thread, shall not sew near the edge of the fabric, shall not double sew at 10-15 stitches per inch, and shall use thread material that closely matches fabric properties. If stapled or pinned, the Permittee shall pin on 2 foot (0.6m) centers and use 6"x 1" wide staples which can be applied by foot activated guns.

    d. Caution shall be exercised when placing and compacting the first (12”) twelve inches of material so as to not damage the Geofabric material.

B. Under-drain

1. If an excavation cuts through an existing under-drain system it shall be repaired by the Permittee, in accordance with the BPWD's Rules and Specifications or as directed by BPWD, at no additional cost to the City of Boston.

2. The BPWD reserves the right to require a Permittee to install an under-drain within any major excavation zone if the BPWD determines the existing conditions warrant the use of under-drains

Sec. 5.10 Winter Moratorium

A. Excavations into paved areas will not be approved during the winter moratorium period, **November 15th through April 15th,** unless otherwise stated by the BPWD. In the event that winter weather conditions have not yet set in, and hot-mixed asphalt is available for pavement repair, the BPWD may on a case-by-case basis allow conditional permits to be granted. The Permittee will be responsible for snow plowing and snow removal of the work zone as delineated by the City during construction. The BPWD reserves the right to revoke such permits as weather or hot-mixed asphalt availability conditions warrant.

1. Weather and site conditions that must exist before granting a Permit during the Winter Moratorium include, but are not limited to the following:

    a. Paving surface temperature in the shade of 40°F (degrees Fahrenheit) and rising during daytime hours.

    b. No measurable snowfall anticipated prior to scheduled pavement restoration.

    c. Frost shall not exist below the surface of a paved area.

2. Nothing in this section shall be construed to limit ability to address emergency situations. If a paved area excavation occurs due to an emergency, documentation of that emergency is required to be submitted with the next days permit application.

B. The following specifications shall apply when work is conducted in a paved area during the winter moratorium:

1. Every Tuesday and Wednesday at 9:30am the Moratorium Board shall meet in room 714 at Boston City Hall where the Permittee may present a written request for a waiver to the Winter Moratorium. The Moratorium Board shall determine if this request is approved or denied on a case-by-case basis.

2. All permits granted during the Winter Moratorium may be required to use Controlled Density Fill (CDF) as directed by the Commissioner. CDF shall be heated when the temperature is below 20°F (degrees Fahrenheit). CDF shall conform to the Commonwealth of Massachusetts Department of Public Works standard specification "MHD M4.08.0 Controlled Density Fill", Type 1E or 2E Excavatable mixtures.

3. All steel plates utilized during the winter Moratorium ***must*** be recessed unless otherwise authorized by the BPWD.

4. If steel plates are necessary the BPWD and the CIU ***must be notified*** of their locations. To notify the BPWD a fax must be sent to 617-635-7605. A follow-up call must be made to the BPWD at 617-635-7560. To notify the CIU a fax must be sent to 617-635-7498. A follow-up call must be made to the CIU at 617-635-4950. Failure to notify the BPWD and CIU may result in suspension of all non-emergency permits. The fax notification form can be found in Appendix B of these Rules and Specifications.

5. **If a plate cannot be recessed as a result of existing roadway conditions the Permittee must provide a detailed explanation on the fax notification form. (see Appendix B)**

C. Temporary pavement repair must be hot-mixed asphalt, unless hot-mix material is documented to be unavailable within a (75) seventy-five mile radius of the City of Boston. If hot mix asphalt is unavailable the Permittee must use Modified Winter Patching Material as specified in Appendix A. The Permittee is required to maintain to the satisfaction of the BPWD any trench with Modified Winter Patching Material until hot mix asphalt is available. When hot mix asphalt becomes available the Permittee is required to remove all Modified Winter Patching Material and perform the Temporary Repair as described in Section 5.10. **Hot mix asphalt materials may require a transport device to ensure proper placement temperature and integrity of the asphalt placed during cold weather**.

SECTION 6.00

QUALITY ASSURANCE PROTOCOL

Sec. 6.01 CIU Inspections

A. The Commissioner will assign an Inspector, at the expense of the Permittee, to supervise the opening, occupancy, obstruction, construction, or use made under any issued Permit. The Commissioner's representative shall have the full cooperation of the Permittee to rectify any deficiencies observed during site visits. Failure to take action as requested by the Inspector, or hostile behavior exhibited towards the Inspector shall result in the revocation of the Permit.

B. Inspections shall be scheduled based upon information provided by the Permittee as follows:

1. The Permittee is required to contact the BPWD at 617-635-4950 at least (24) twenty-four hours in advance of the start of work, backfilling, or paving operations. The BPWD shall have an operator available Monday through Friday from 9 am until 5 pm. After 5 pm the Permittee can call 617-635-4950 to access voicemail. All required information can be left on voicemail. The BPWD requires the following information on all call ins:

    i. Permit Number
    ii. Location
    iii. Type of Activity
        (1) Starting Excavation
        (2) Backfilling
        (3) Temporary Paving
    iv. Date and Time of the Activity
    v. Foreman Name and Phone Number

2. Notification of the anticipated timing of the aforementioned activities must be acknowledged by the BPWD. Any notification delivered by email or facsimile must be followed up with a telephone conversation or email response to assure its proper and timely receipt.

3. Permittees shall endeavor to make notification by 4:00 pm on the day prior to their anticipated activity. In the event of schedule changes the Permittee shall notify the BPWD by 7:00 am on the day work was scheduled. In the event of emergencies the Permittee must provide a minimum of one-hour notification to assure inspection availability.

4. If a BPWD inspector is unable to be on-site within 30 minutes of the acknowledged anticipated start of construction the Permittee shall be allowed to commence construction in accordance with these Rules and Specifications.

C. At all times the Permittee shall provide safe means of access to and from the worksite.

D. Methods of inspection and testing shall be in conformance with industry standards, and may be conducted after final pavement is installed.

E. Testing shall be conducted on a random basis to insure compliance with the BPWD Rules and Specifications. This testing may include procedures to confirm ride-ability, proper soils and pavement materials, depths, and compaction. All testing expenses shall be the responsibility of the Permittee.

F. **All street-opening failures noted during inspections shall be replaced at the expense of the Permittee.**

Sec. 6.02 Permittee Report Card

A. Inspectors shall complete a field report for **each street opening site visit**. If at any time during construction the Permittee is found to be in violation of these Rules and Specifications the Inspector shall document and **issue a violation** to the Permittee.

B. Inspections are performed using a **standard fifteen item** report which evaluates key construction items based on the Public Works Department Rules and Specifications. The items address the conventional process of street excavation as well as monitor permit restrictions and safety of the jobsite. Inspections are made throughout the life of the job. Some inspection items may not be relevant during any particular site visit.

C. Information gathered by the Construction Inspection Unit's daily field reports are compiled and tabulated. Inspections are **stored in a utility performance database** maintained by the Boston Public Works Department, and are utilized to calculate various statistics pertaining to each Permittee.

D. The database generates an **overall noncompliance rating** to qualify the performance of companies working in the public way. This rating is displayed in an individual **report card** available for each Permittee working in the city. The report card compares the Permittee's rating with the overall citywide noncompliance ratings.

E. All major utilities will be **provided a weekly report card** of their construction practices. A summary report card will be sent to the Permittee at the end of each month, and calendar year.

F. The report card is intended to be utilized as a **valuable construction tool** for each Permittee when analyzing and self evaluating both the strong and the weak points in their construction practices.

Sec. 6.03 Permittee Worksite Shutdown and Meeting Protocol

A. The BPWD enforces a **strict zero tolerance policy** in regard to any violation(s) of **individual worksite(s**) within the City of Boston. Cited violations may result in **an immediate shutdown** and a meeting on construction practices will be attended at City Hall before work is allowed to continue. The City's expectation is that the worksite will comply immediately after this meeting, and that the Rules and Specifications will then be followed for the duration of the job.

B. The City of Boston reserves the right to enforce a **"Three Strike" policy regarding overall construction practices throughout a calendar year** regarding any one of the following criteria:

   1. Permittee's poor overall non-compliance rating

   2. An elevated violation level of an individual inspection item (e.g. steel plates)

   3. A Permittee's particular sub-contractor, supervisor, team leader, or foreman's unacceptable construction practices in any (1) one inspection item.

C. If at any time the Permittee's criteria becomes unacceptable, the Permittee shall be required to meet with the CIU to address their overall construction practices in the City of Boston. To prevent further action by the City an appreciable level of improvement must result after such a meeting. The City considers this a **first strike**.

D. If the Permittee **fails** to demonstrate an immediate appreciable level of improvement in their criteria, **all non-emergency permits will be suspended** and a meeting will be held to review why the Permittee did not improve their overall construction practices, or an individual inspection item. The City considers this a **second strike**.

E. If the Permittee **continues to not show an appreciable level of improvement** after the CIU suspension of non-emergency permits, all non-emergency permits shall be once again suspended. The City considers this a **third strike**. The Permittee's highest level of **management** will be required to meet with the **Chief of Public Works and Transportation** and a Representative from the **Mayor's Office** to discuss the Permittee's failure to adhere to the City's Rules and Specifications for Excavation Activity Within the City of Boston.

F. If a Permittee's particular sub-contractor, supervisor, team leader, or foreman's unacceptable construction practices in any (1) one inspection item result in (3) three shutdown meetings in one calendar year, the city will consider this a **third strike** for the Permittee, **all non-emergency permits will be suspended,** and The Permittee will be required to meet with the City of Boston to discuss their construction practices on the particular item they were in violation of. To prevent further action by the City an appreciable level of improvement must result after such a meeting.

G. Any violation, a failure to respond to any violation, or any hostile behavior by the Permittee towards the CIU/CITY inspector may result in the **suspension of all non-emergency permits**. The Permittee shall be called to meet with the Chief of Public Works and Transportation to address the Permittee's construction activity in the City of Boston.

   Massachusetts General Law Chapter 82A, 520 CMR 14.03: "JACKIES LAW" gives authority for the City of Boston to revoke and/or suspend the granting of permits barring a public hearing with the City in response to violations made regarding Jackie's Law. All hearings under this section shall be held in accordance with G.L. c. 30A and 801 CMR 1.02. Each permitting authority shall have the discretion to establish the grounds consistent with this regulation for a suspension or revocation however such suspension or revocation shall not be imposed in a manner which directly, substantially or specifically regulates the occupational safety or health of any employee engaged in employment covered by the Federal Occupational Safety and Health Act.

H. The Permittee shall be held accountable for any violations made by their work crew(s).

SECTION 7.00

LOCATION OF UTILITY INFRASTRUCTURE

Sec. 7.01 Selection of Utility Infrastructure Location

A. The BPWD shall specify for each street classification the approximate locations within the right-of-way for each type of utility. The utility may determine that an alternate location is preferable. In such cases the utility shall submit written application to the BPWD describing the reason for relocating the utility. If the BPWD finds good cause for the alternate location, the BPWD may allow the utility to locate or relocate its infrastructure to a location other than that specified by the Rules and Specifications.

B. In deciding if there is good cause to alter the typical location of the utility infrastructure, the BPWD shall consider the following factors:

1. Public safety
2. Accessibility to the utility infrastructure
3. Pavement disturbance reduction benefits both current and future, if any
4. Future use impacts
5. Adequacy of location documentation
6. Space constraints for other utilities

C. When making an application to alter the typical location of a utility infrastructure, the applicant must certify with written documents that it has consulted with, and received approval from, all other existing and potential utilities in the proposed location. The BPWD shall give reasonable deference to an objection made by any utility on the basis of protection and maintenance of its existing infrastructure.

D. The BPWD shall reserve the right to require public improvements in cases where it allows a utility to locate its infrastructure in non-standard locations. The BPWD shall consider the Utilities fiscal policies guiding infrastructure expansion decisions when determining the level of required public improvements. The cost of this requirement shall not exceed (75%) seventy-five percent of the standard legal location cost.

Anne B. McNeil
Permit Supervisor
Permit Branch

Frank Dechellis
Chief Engineer
Highway Division

Dennis Royer
Chief of Public Works and Transportation
City of Boston

February 10, 2009

APPENDIX A

MODIFIED WINTER PATCHING MATERIAL

1.0 DESCRIPTION:

This material shall be a plant-mixed pavement patching material capable of being stored in a stockpile composed of mineral aggregates and a modified bituminous material, and approved by BPWD. The mix provided shall meet the gradation contained herein.

Material shall be provided in accordance with the standard specifications for Cold Patching within the state or local jurisdiction, except as modified herein.

The material shall be uniform, workable, coated, and free of contaminants, debris, or ice and have a wet, shiny visual appearance at the time of delivery.

2.0 MATERIALS:

This material shall be a plant-mixed pavement patching material capable of being stored in a stockpile composed of mineral aggregates and a modified bituminous material, and approved by BPWD. The mix provided shall meet the gradation contained herein.

A. Aggregates: Aggregates shall conform to AASHTO M43 (aggregate size designation) modified as shown below and in accordance with ASTM C-136 for standard test method.

Sieve	Open Graded #9 Stone % Passing	Open Graded #89 Stone % Passing
½" (12.5mm)	100	100
3/8" (9.50mm)	100	90-100
#4 (4.75mm)	85-100	20-55
#8 (2.36mm)	10-40	5-30
#16 (1.18mm)	0-10	0-10
#30 (0.60mm)	0-7	0-7
#50 (0.30mm)	0-5	0-5
#200 (0.075mm)	0-2.5	0-2.5

ASTM C-88	Soundness Loss (Sodium – 5 cycles	12.0% Max.
ASTM C-131	Los Angeles Abrasion Loss	40.0% Max.
ASTM C-127, 128	Absorption	0.5% - 2.0%
ASTM C-127-128	Specific Gravity	2.45% - 2.80%
ASTM C-123	Deleterious Material soft pieces	3.0% Max.
ASTM C-295	Deleterious Material Coal & Lignite	1.0% Max.
ASTM C-142	Deleterious Material Shale/Chirt/etc.	2.5% Max.

B. Bituminous Material: The bituminous material shall be either UPM Liquid Asphalt Blend (Unique Paving Materials-Cleveland, Ohio 1-800-441-4880), or an approval equal. The material must be prepared from a base asphalt stock meeting the following requirements:

ASTM D-1310	Flash Point (TOC) 94°C (200°F) min.
ASTM D-2170	Kinematic Viscosity @ 60°C (140°F) 400-650
ASTM D-95	Water: 0.2% Max.
ASTM D-402	Distillate Test (Volume of original sample) To 225°C (437°F): None To 260°C (500°F): None To 315°C (600°F): 0-18% Residue from Distillate at 360°C (680°F): 72-95%
Tests on Residue:	
ASTM D-2171	Abs. Viscosity at 60°C (140°F): 125-425 Poises
ASTM D-5*	Penetration: 180 min. (using cone method)*
ASTM D-113	Ductility at 4°C (39°F) 1cm/min: 100 min.
ASTM D-2042	Solubility in Trichloroethylene: 99% min.

* Same procedure as ASTM D-5 except using a penetration cone conforming to ASTM D-217 in lieu of the standard penetration needle. The total moving weight of the cone and attachments shall be 150g ± 0.1 grams. The transfer dish water level shall be lowered to less than the height of the sample followed by decanting water from the top of the sample before transferring from the bath to the electrometer.

The bituminous material shall be available in various grades so that one such grade shall enable a stockpile to remain pliable and workable at a temperature of -15°F (-26°C).

3.0 COMPOSITION OF MIXTURES:

The aggregate gradation and bituminous material quantities shall meet the requirements given in Table 1 below. The Job Mix Formula design computations and trial batch(es) tests shall be submitted to BPWD or their Engineer designate for review prior to shipment of material to any municipal location. As with the State and local specifications, information shall be supplied including aggregate gradations; aggregate type and sources of supply; bituminous material amount and type including any additives; and temperature ranges for the material preparation. Submission of the above design and test information shall be required each time a change is made in the production design, producer, aggregate type, or source.

TABLE 1
COMPOSITION OF STOCKPILE PATCHING MATERIALS

Sieve	Open Graded #9 Stone % Passing	Open Graded #89 Stone % Passing
1/2" (12.5mm)	100	100
3/8" (9.50mm)	100	90-100
#4 (4.75mm)	85-100	20-55
#8 (2.36mm)	10-40	5-30
#16 (1.18mm)	0-10	0-10
#30 (0.60mm)	0-7	0-7
#50 (0.30mm)	0-5	0-5
#200 (0.075mm)	0-2.5	0-2.5
Total Liquid	5.75-7.0	5.25-7.0

The Final Job Mix Formula Total Liquid Content, when received by BPWD, shall not vary more than 0.5% from the design content when tested in accordance with ASTM D2172 Method A (including the ash), or Method E. The master ranges given above in Table 1 shall govern over the final job mix design content and allowable variations. All aggregate percentages in the table are based on the total weight of aggregate. The bituminous material percentage is based on the total weight of the mix and shall include any additives.

The mixture, after obtaining field working temperature following mixing, shall meet the following requirements:

A. *Stripping Test*: A sample for testing is to be obtained by removing a sample toward the top of the stockpile and at a one-foot depth, and removing a similar sample toward the bottom of the stockpile at least one foot up from the toe of the stockpile and one foot into the stockpile. The suitable size test sample of the plant mixed material shall be permitted to cure at normal laboratory temperature for at least 24 hours after which it shall be placed in a glass jar, fitted with a tight cover, and completely covered with distilled water. The jar and contents shall then be allowed to stand for a period of 24 hours at normal laboratory temperature (approximately 70°± F) (21°C). The sample shall then be shaken vigorously for a period of 15 minutes. The water shall then be poured from the jar and the sample removed to a flat surface and is permitted to air dry after which it shall be visually examined for stripping of the bituminous film from the aggregate.

4.0 FIELD PERFORMANCE:

The mixture shall be capable of maintaining all of its performance features after remaining in an uncovered stockpile of 100 tons or more for up to (12) twelve months. The field performance, as specified in this Section, shall meet a minimum of 80% effectiveness. The mixture shall be capable of maintaining adhesive qualities in areas that are damp or wet at the time of placement, and shall not bleed (flush) when overlaid With bituminous concrete.

Provided an approved material was used in the application, and provided the mixture was stockpiled and applied in accordance with the manufacturer's recommendations, and municipal records can document the application date and locations as well as the method of placement, ambient temperature and weather, the following field performance criteria shall be used to measure the effectiveness of the patch material. A total of (20) twenty patches shall be used for the rating process; (10) ten each within two discrete areas from one another, preferably representing two different work crews. The rating of the patches for field performance may be undertaken by BPWD or their designate Engineer at any time, but a minimum of (2) two ratings shall be performed during each patch season.

A. The in-place patch shall not ravel out. Raveling shall be measured in accordance with pavement management distress survey methods. Light raveling shall be acceptable, whereas heavy raveling shall be unacceptable.

   RAVELLING: Raveling is the wearing away of the pavement material surface caused by the dislodging of aggregate particles; it shall be an indication of poor in-place patch adhesion performance. LIGHT Raveling is viewed as loose aggregate particles, coated or uncoated, existing on or near the patch and having a patch surface texture that exhibits a pitted surface texture. HEAVY Raveling shall be indicative of a loss of aggregate particles greater than two stone thicknesses in depth from the original placed surface normally taken from the elevation of the adjacent pavement surface.

B. The in-place patch shall not distort. Distortion shall be measured in accordance with pavement management distress survey methods. Light distortion shall be acceptable, whereas medium or heavy distortion shall be unacceptable.

   DISTORTION: Distortions are localized pavement material surface areas having elevations slightly lower or higher than those of the surrounding pavement. Distortions can cause discomfort and/or a safety hazard, and/or vehicle damage, requiring a reduction in speed for safety. LIGHT Distortion is measured as having a deviation from the normal plane of the street less than or equal to (1") one inch. MEDIUM or HIGH Distortion is a measurement from the normal plane of the street that is in excess of (>1") one inch. Generally, distortion shall exist as a depression within the patch area, or a bump or shove of material at the downside of the patch to the traffic flow.

5.0 STOCKPILING AND HANDLING PROCEDURES:

Following production, the patch material should be allowed to cool to ambient temperature prior to field use by storing (24) twenty-four to (48) forty-eight hours in piles no greater than (6) six feet. Once ambient temperature levels are reached, the patch material can be mounded to meet local needs, being sure to avoid traveling on the patch material with loaders and trucks. The stockpile of patch should be placed on a clean, hard, paved surface preferably away from blowing dust. Avoid contamination from other sources. To take advantage of the solar heat effects the ideal stockpile is rectangular in shape with sloped sides and ends. The stockpiles are placed in southeasterly to northwesterly directions; this allows the operator work off the southeast face during the morning hours, providing additional workability at sub-zero temperatures. These modified patch material stockpiles form a thin protective crust after a few weeks. This crust plays an important role in the longevity of the stockpile. It should not be disturbed except for the portion that gets mixed in while loading trucks, which should be loaded if possible from the shorter rectangular end of the stockpile. Do not freshen or work the entire pile to disturb the protective crust. If moisture has penetrated the stockpile, subsequently freezes and creates visible ice crystals inside of the pile, the material should be placed inside overnight at a minimum temperature of 50°F (10°C). Material returning to the stockpile at the end of the day should be near the working face, followed by mixing with fresh material on a 50/50 basis during the next load out.

6.0 INSPECTION, TESTING AND ACCEPTANCE:

The Producer shall contact the municipal Highway Department office (72) seventy-two hours in advance to arrange for an inspector, or their designate, to oversee the preparation of mixtures. All submittals as required by this specification are to follow immediately after design/production of the material. If inspections have not been performed at the time of mixture preparation, samples from the stockpile shall be tested by BPWD to determine acceptability of the mixture prior to shipment to any municipal yard. (2) Two samples shall be lifted from each stockpile, one sample taken toward the top and (12") twelve inches inside the pile, while the second sample is to be taken (12") twelve inches off from the toe of the stockpile and (12") twelve inches inside the pile. The results of the (2) two tests shall be averaged and compared to the design Job Mix Formula. Performance evaluations shall be conducted randomly by BPWD and at the discretion of BPWD, but in no cased less than (2) two such performance evaluations per patch season as given in Section 5 of this specification. The municipal inspector, or designate, shall follow and document the patch placement. A minimum of (10) ten documentations for each of (2) two separate working crews shall be considered for each initial performance evaluation. Follow-up condition evaluations may be conducted at any time after placement for up to (12) twelve months. Each follow-up condition evaluation shall be reported and submitted to the Highway Department. Less than (80%) eighty percent effective performance at any time after the placement of the patching material shall be considered unacceptable when at least (20) twenty patches have been evaluated. In the event the material furnished does not meet the requirements of this specification (regardless of weather, test acceptability, method of repair or other conditions), suppliers shall reimburse BPWD at a replacement cost of $110/ton of representative material purchased and placed. Such reimbursement shall be submitted to BPWD in the form of a cashier's check within (28) twenty-eight days from the date of written notification from BPWD. Remaining stockpiled material representative of the rejected patches shall be removed from the site(s) and replaced, in equal quantity, with new specification material at no cost to BPWD. The material shall be delivered to the location(s) designated by BPWD within (14) fourteen days from the date of written notification from BPWD.

The initial approval of a mixture, or the initial acceptance of material, shall in no way preclude further examination and testing if unsatisfactory results are achieved. The acceptance at any time shall not bar its future rejection.

APPENDIX B:

BOSTON PUBLIC WORKS DEPARTMENT
PLATE NOTIFICATION FORM

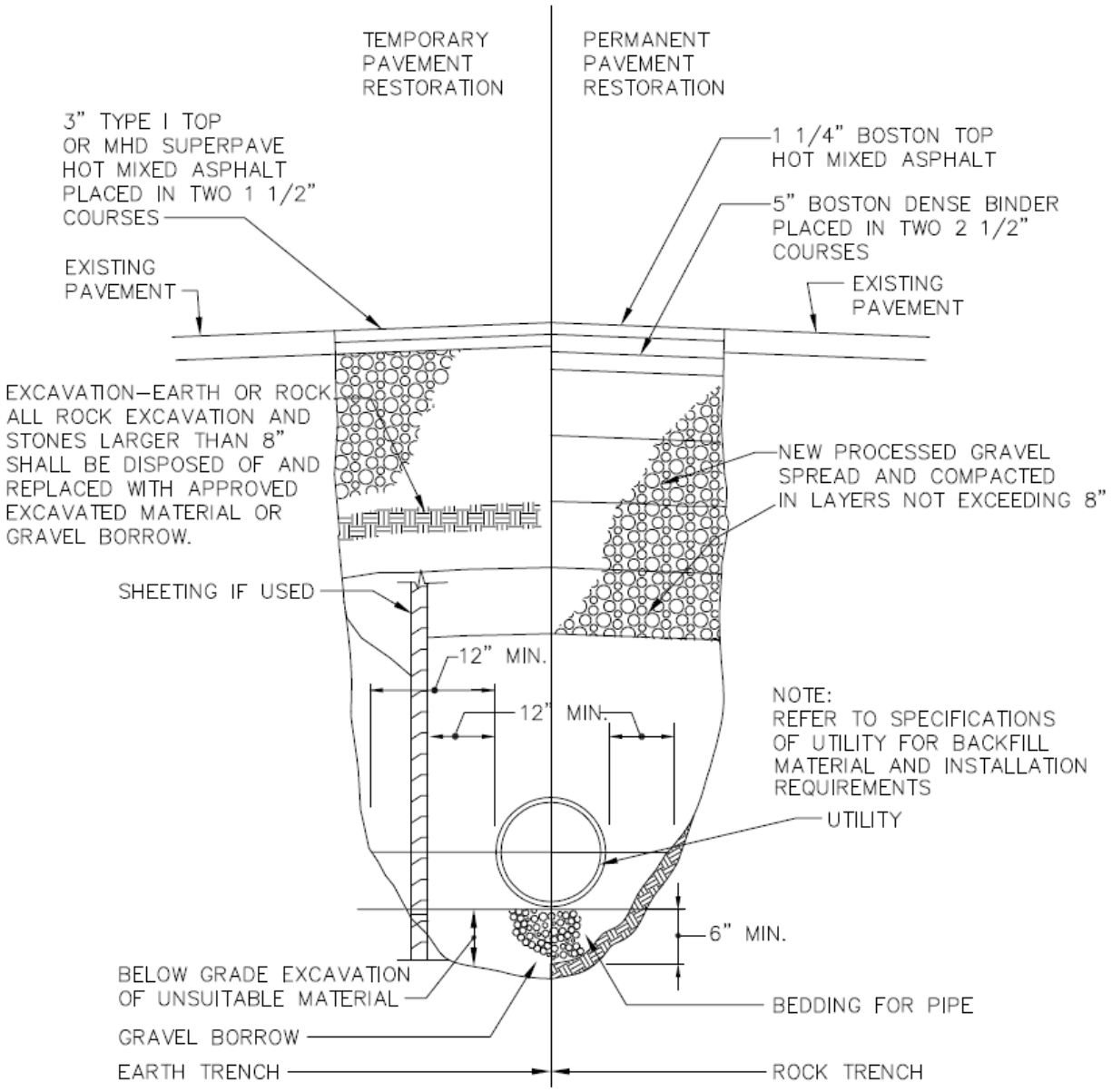
Please fax your Notifcation immediately to Frontage Road Highway Office at 617-635-7605 and the Construction Inspection Unit (CIU) by faxing to 617-635-7498

NEIGHBORHOOD	
HOUSE #	
STREET	
PERMIT NUMBER	
PERMITTEE NAME	
CONTRACTOR NAME	
DATE INSTALLED	
DATE TO BE REMOVED	
RECESSED OR BERMED	
ID NAME	
ID PHONE NUMBER	
TYPE OF WORK	
WORK SHIFT	
NUMBER OF PLATES	
NOTES	

APPENDIX C:

Boston Public Works Department –

Backfill and Pavement Cross Section



TYPICAL UTILITY TRENCH SECTION

NOT TO SCALE

APPENDIX D:

Boston Water and Sewer Commission –

Adjust Casting

Updated December 1, 1997

Detail No. B-15

TYPE "A" FRAME AND COVER
CONCRETE COLLAR
BUTYL SEALANT
BITUMINOUS CONCRETE TOP COURSE
EXISTING ROADWAY
APPROVED GRADE RING ON SOUND MASONRY
REPLACE AND ADJUST MASONRY AS NECESSARY TO ACHIEVE PROPER FINISHED GRADE
NOTE: DIMENSIONS INDICATED ARE MINIMUM ACCEPTABLE. THE ENTIRE EXCAVATION SHALL BE FILLED WITH CONCRETE
NOTES:
-APPLY SEALANT TO SURFACE OF COLLAR AND MANHOLE FRAME PRIOR TO PLACING BITUMINOUS CONCRETE TOP.
-ADJACENT TO CASTING, PLACE AND COMPACT BITUMINOUS CONCRETE TOP IN TWO COURSES.
Boston Water and Sewer Commission
ADJUST CASTING
NOT TO SCALE
UPDATED: DECEMBER 1, 1997
DETAILED B-15

APPENDIX E:

Mass Highway Construction and Traffic Standard Detail –

Pedestrian Ramps (Wheelchair Ramps)

Number: E-97-008
Date: 10/09/1997

MASS HIGHWAY

Number: E-97-008

Date: 10/09/97

ENGINEERING DIRECTIVE

Thomas F. Broderick

CHIEF ENGINEER

EFFECTIVE IMMEDIATELY
ENGINEERING DIRECTIVE

IN ACCORDANCE WITH 521 CMR RULES and REGULATIONS of the ARCHITECTURAL ACCESS BOARD (AAB) and AMERICANS with DISABILITIES ACT (ADA), THE FOLLOWING WILL BE ADHERED TO ON ALL PROJECTS:

1. All projects must be designed in accordance with the Wheelchair Ramp Standards booklet effective 10/8/97, and the Construction and Traffic Standard Details, 1996 Metric Edition as revised.

2. All projects which include wheelchair ramps must include construction drawings showing the location of all wheelchair ramps. Projects without construction plans must include these drawings in the Special Provisions of the project.

3. All proposed wheelchair ramp construction plans must use those symbols as shown in the Wheelchair Ramp Standards booklet and the Construction and Traffic Standard Details, 1996 Metric Edition as revised. The selected symbols must be representative of the finished ramp. The wheelchair ramp symbol illustrated in Table 2.1 of the Highway Design Manual showing plan symbols for existing features is sufficient to indicate existing wheelchair ramp locations.

4. The center line of the wheelchair ramp must be perpendicular to the curb. In cases where the crosswalk is skewed to the wheelchair ramp, a 2.2 m (diameter) turning area, entirely contained within the crosswalk, must be provided at the base of the wheelchair ramp. If necessary, the crosswalk should be widened to accommodate the turning area.

Distribution: B Please post: _____ Do not post X

5. Where grades or cross slopes change significantly and/or in densely populated urban areas where sidewalks significantly change in grade or cross slope, detailed sidewalk and wheelchair ramp grading plans must be developed to minimize impact to driveways and building entrances.

6. It is the responsibility of the design engineer to carefully review all wheelchair ramp locations on site during the design phase and to provide all necessary plans in accordance with AAB and ADA.

7. The entire wheelchair ramp shall be constructed of cement concrete , unless a project review by the Massachusetts Historical Commission under G. L. chapter 9 section 27c or the Federal Government pursuant to section 106 of the Federal Historic Preservation Act requires MassHighway to eliminate, minimize or mitigate said concrete construction as an adverse effect. Limits are defined in MassHighway Construction Standards drawings and in the Wheelchair Ramp Standards booklet effective 10/8/97

8. Level Landing is defined as an area at the top of each wheelchair ramp consisting of a length no less than 48" (1219 mm) as measured from the back of sidewalk to the start of ramp (or the gutter line if there is no ramp length) and with the combination of cross slope toward the street (for drainage) and the profile grade along the sidewalk such that no grade in any direction on the landing exceeds 1.9%, (this includes the steepest diagonal slope of the landing area).

9. The Contract Special Provisions must contain the following statements:

   A. "Contractors shall establish grade elevations at all wheelchair ramp locations, and shall set transition lengths according to the appropriate table in the Construction Standards (or to the details shown on the plans)."

   B. "All wheelchair ramp joints and transition sections which define grade changes shall be formed, staked and checked prior to placing cement concrete. All grade changes are to be made at joints."

The attached revised sheets replace the existing plates of the Massachusetts Highway Department (MassHighway) Construction and Traffic Standard Details 1996 Metric Edition as revised.

Att: MassHighway Construction and Traffic Standard Details 1996 Metric Edition as revised.

Revised Plate #:	Effective Date :
107.1.0	10/8/97
107.1.1	10/8/97
107.2.0	10/8/97
107.3.0	10/8/97
107.5.0	10/8/97
107.6.0	10/8/97
107.6.1	10/8/97
107.6.2	10/8/97
107.6.3	10/8/97
107.6.4	10/8/97
107.7.0	10/8/97
107.8.0	10/8/97
107.9.0	10/8/97
107.10.0	10/8/97

No longer in use are plate numbers:
107.11.0 through 107.15.0 issued ——5/16/96

1. SIDEWALK CROSS SLOPES, AS INDICATED IN THE STANDARD SPECIFICATIONS, WILL BE AT 1.6% MAXIMUM, 1.5% PREFERRED FOR BRICK, CEMENT CONCRETE AND BITUMINOUS CONCRETE. THE ONLY EXCEPTION TO SIDEWALK CROSS SLOPES ON BRIDGES WHICH WILL BE 1%. (REFER TO STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, SECTION 700). IN ACCORDANCE WITH THE ARCHITECTURAL ACCESS BOARD (AAB) RULES AND REGULATIONS THE SIDEWALK CROSS SLOPE CANNOT EXCEED 2.0%.

2. AN UNOBSTRUCTED PATH OF TRAVEL WITH A MINIMUM WIDTH OF 915 mm SHALL BE MAINTAINED. THE DESIRABLE WIDTH IS 1.0 METER.

3. THE WHEELCHAIR RAMP SLOPE AND SIDE SLOPES (TRANSITIONS) MUST NOT EXCEED 1:12. (8.0% MAXIMUM 7.5% PREFERRED) HOWEVER THESE SLOPES MAY BE FLATTER THAN 1:12 WHEN WARRANTED BY SURROUNDING CONDITIONS.

4. WHERE THE ROAD PROFILE EXCEEDS 5% THE HIGH SIDE CURB TRANSITION LENGTH (Lfh) SHALL BE 4.0 METERS.

5. IN NO CASE, WHERE A STOP LINE IS WARRANTED, SHALL A RAMP BE PLACED BEHIND THE STOP LINE.

6. FIXED OBJECTS (i.e. UTILITY POLES, HYDRANTS ETC.) MUST NOT ENCROACH ON ANY PART OF A WHEELCHAIR RAMP, INCLUDING TRANSITION SLOPES.

7. AT NO TIME IS ANY PART OF THE WHEELCHAIR RAMP, EXCLUDING CURB TRANSITIONS, TO BE LOCATED OUTSIDE OF THE CROSSWALK. WHEELCHAIR RAMP ENTRANCE IS TO BE CENTERED IN THE CROSSWALK WHENEVER POSSIBLE.

8. CATCH BASINS WHICH ARE TO BE LOCATED IN THE VICINITY OF A WHEELCHAIR RAMP SHALL BE LOCATED UP-GRADE OF WHEELCHAIR RAMP ENTRANCE.

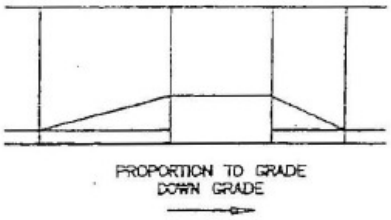
9. THE ENTRANCE OF A WHEELCHAIR RAMP SHALL BE FLUSH WITH THE ROADWAY.

10. TESTING SURFACE: WHEN TESTING WITH A STRAIGHTEDGE PLACED PARALLEL TO THE LINE OF SLOPE, THERE SHALL BE NO DEVIATION FROM A TRUE SURFACE IN EXCESS OF 6 mm.

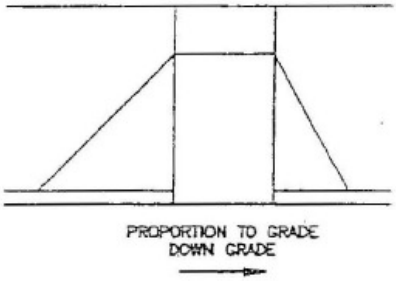
11. AN ON BRIDGE WHEELCHAIR RAMP SHOULD BE AVOIDED BECAUSE IT INTERRUPTS THE SIDEWALK REINFORCEMENT WHICH IS INTEGRAL TO THE STRENGTH OF THE RAILING/BARRIER SYSTEM AND BECAUSE THE STANDARD 200 mm CURB REVEAL WOULD RESULT IN EXCESSIVELY WIDE RAMPS. IF AN ON BRIDGE WHEELCHAIR RAMP IS UNAVOIDABLE, PRIOR APPROVAL OF THE BRIDGE ENGINEER MUST BE OBTAINED. SPECIAL DETAILING OF THE REINFORCEMENT AND CURB REVEAL WILL BE REQUIRED TO MAINTAIN THE PERFORMANCE OF THE RAILING/BARRIER SYSTEM. IN ALL CASES ACCESSIBILITY WILL BE PROVIDED TO AND FROM THE BRIDGE SIDEWALK BEYOND THE END OF THE BRIDGE.

12. IT IS THE DESIGNER'S RESPONSIBILITY TO OBTAIN AND BE FAMILIAR WITH THE AAB RULES AND REGULATIONS. WHEN IT IS TECHNOLOGICALLY UNFEASIBLE AND IMPRACTICAL TO CONSTRUCT WHEELCHAIR RAMPS IN COMPLIANCE WITH AAB, A REQUEST FOR A VARIANCE WILL NEED TO BE SUBMITTED. THE DEPARTMENT HANDICAPPED ACCESSIBILITY SECTION SHOULD BE CONTACTED FOR ASSISTANCE WITH DOCUMENTATION.

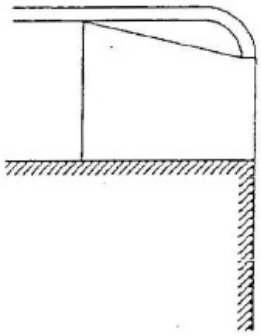
MASS HIGHWAY CONSTRUCTION STANDARDS	WHEELCHAIR RAMP NOTES	DATE OF ISSUE 10/8/97 DRAWING NUMBER 107.1.0



SIDEWALK LESS THAN
3.75 m WIDE



SIDEWALK GREATER THAN
3.75 m WIDE



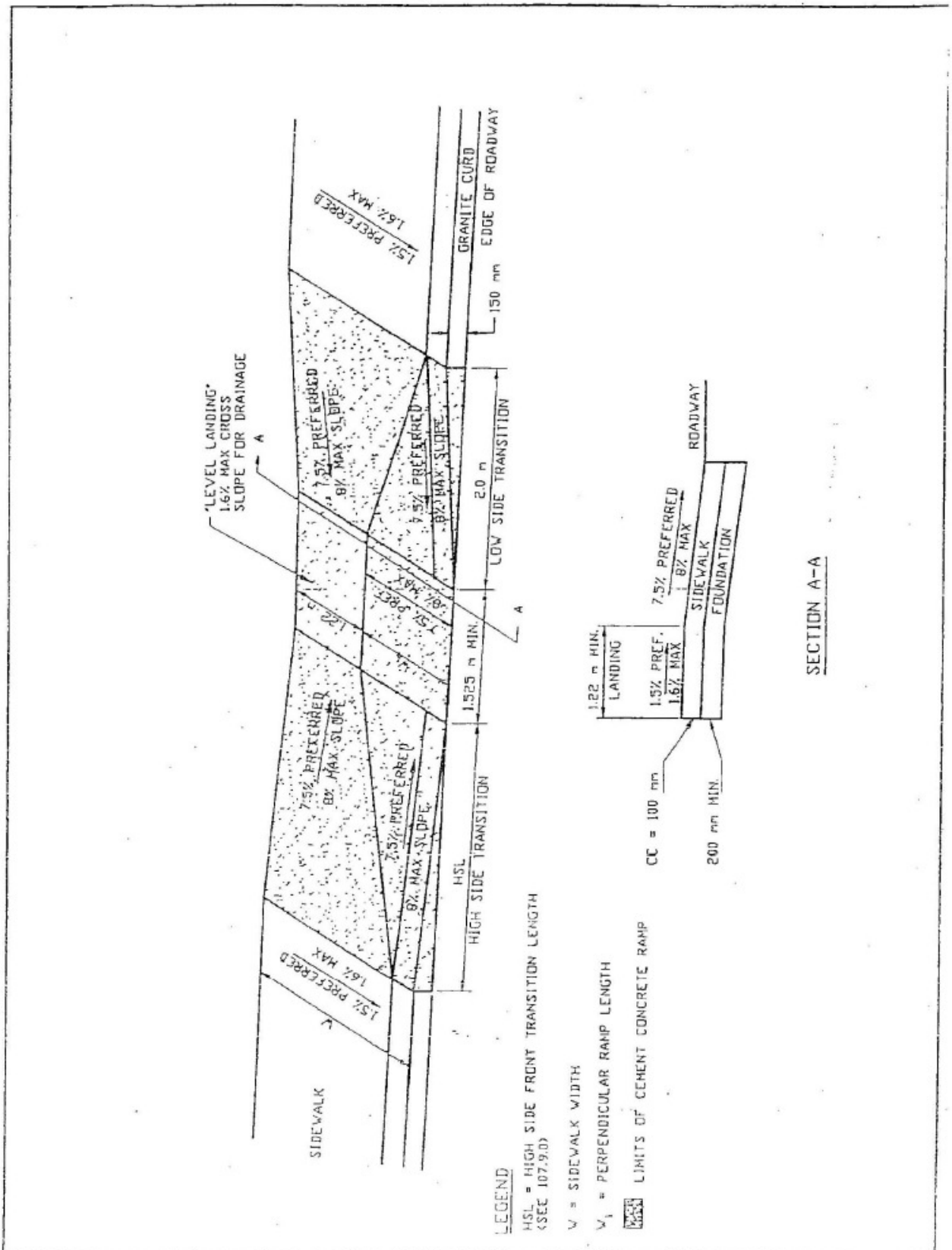
SIDEWALK WITH LIMITED LAYOUT

MASS HIGHWAY
CONSTRUCTION
STANDARDS

WHEELCHAIR RAMP SYMBOLS

DATE OF ISSUE
10/8/97

DRAWING NUMBER
107.1.1

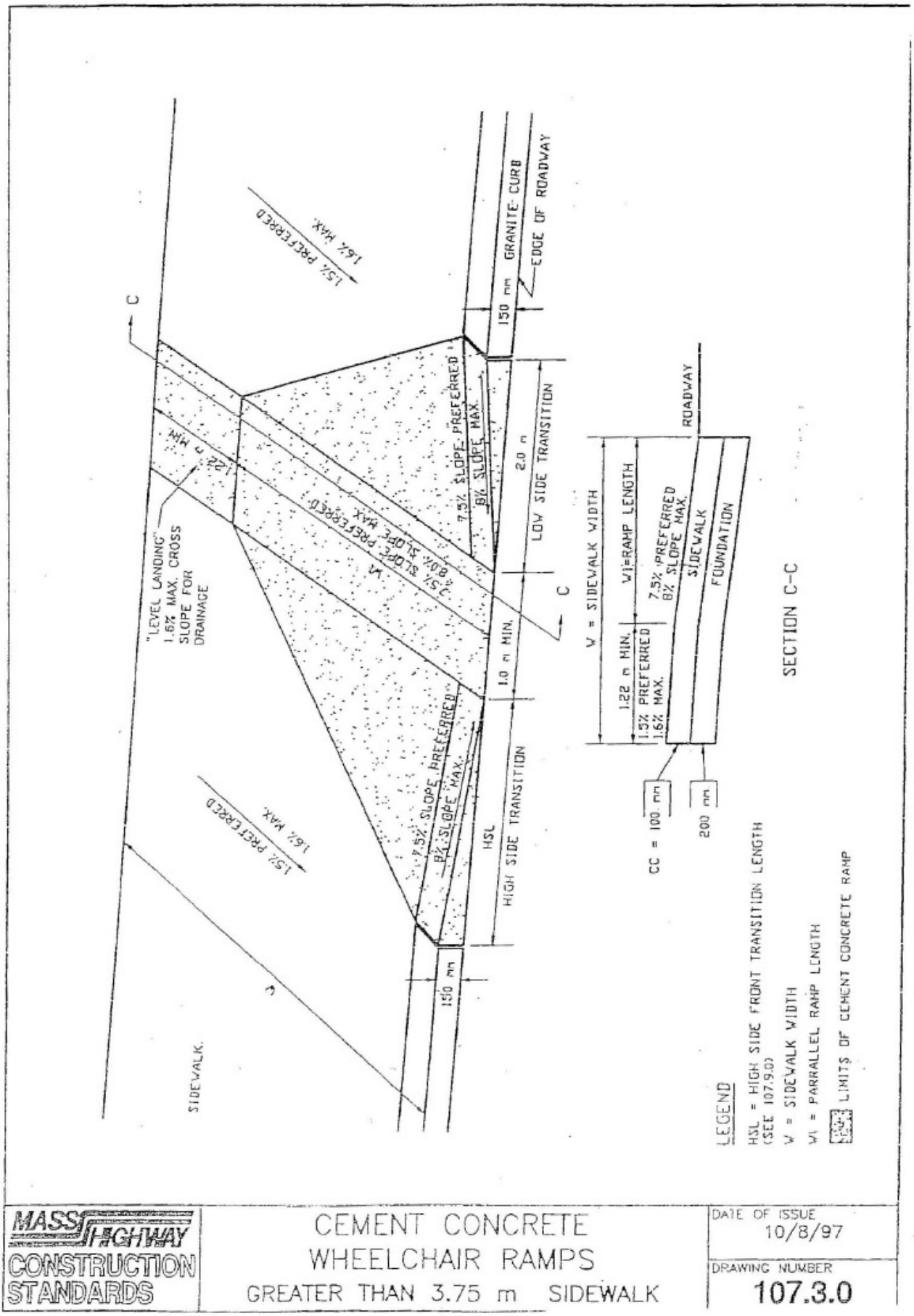


MASS HIGHWAY
CONSTRUCTION STANDARDS

CEMENT CONCRETE WHEELCHAIR RAMPS
LESS THAN 3.75 m SIDEWALK

DATE OF ISSUE
10/8/97

DRAWING NUMBER
107.2.0



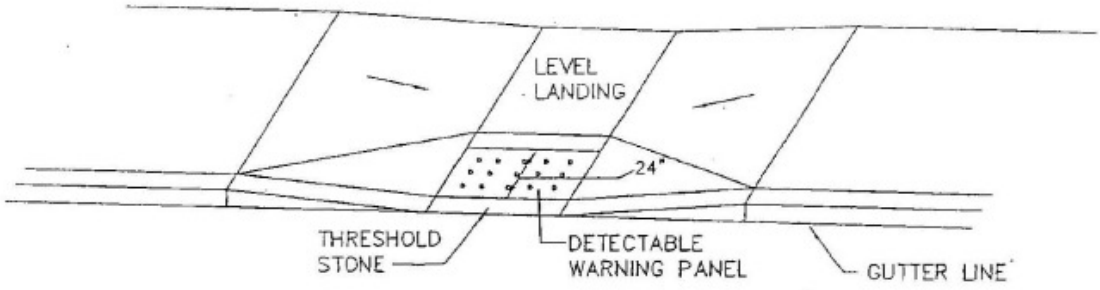
MASS HIGHWAY CONSTRUCTION STANDARDS

CEMENT CONCRETE WHEELCHAIR RAMPS

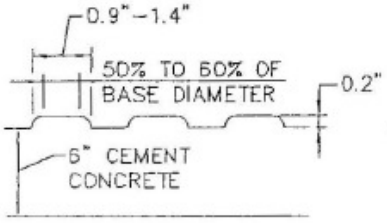
GREATER THAN 3.75 m SIDEWALK

DATE OF ISSUE 10/8/97

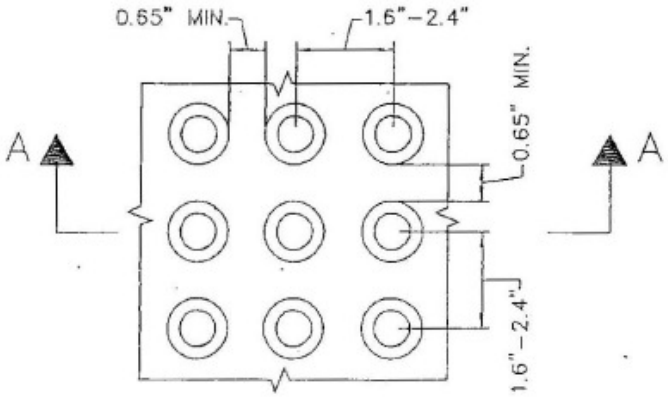
DRAWING NUMBER 107.3.0



TYPICAL INSTALLATION



SECTION A–A



DETAIL OF DETECTABLE WARNING PANEL

NOTES:

1. DETECTABLE WARNING PANELS SHALL BE PERMANENTLY APPLIED TO THE RAMP.
2. DETECTABLE WARNING PANELS SHALL CONTRAST VISUALLY WITH THE ADJACENT WALKWAY SURFACES PER THE FOLLOWING COLOR SCHEDULE:
   DARK GREY ON CEMENT CONCRETE PEDESTRIAN RAMPS
   DARK GREY ON BRICK PEDESTRIAN RAMPS
3. A 6" THICK CEM. CONC. PAD IS REQUIRED UNDER THE AREA OF EACH WARNING PANEL AT BRICK PEDESTRIAN RAMPS.
4. DETECTABLE WARNING PANELS SHALL BE AS MANUFACTURED BY ADA SOLUTIONS, INC. OF NORTH BILLERICA, MA OR AN APPROVED EQUAL.
5. DETECTABLE WARNING PANELS SHALL BE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS.

Public Works Department CITY OF BOSTON, BOSTON, MA 02201 (617) 635-4968	DETECTABLE WARNING PANEL FOR PEDESTRIAN RAMPS	UPDATED: AUGUST, 2006 SCALE: N.T.S.	

521 CMR 21.00: CURB CUTS

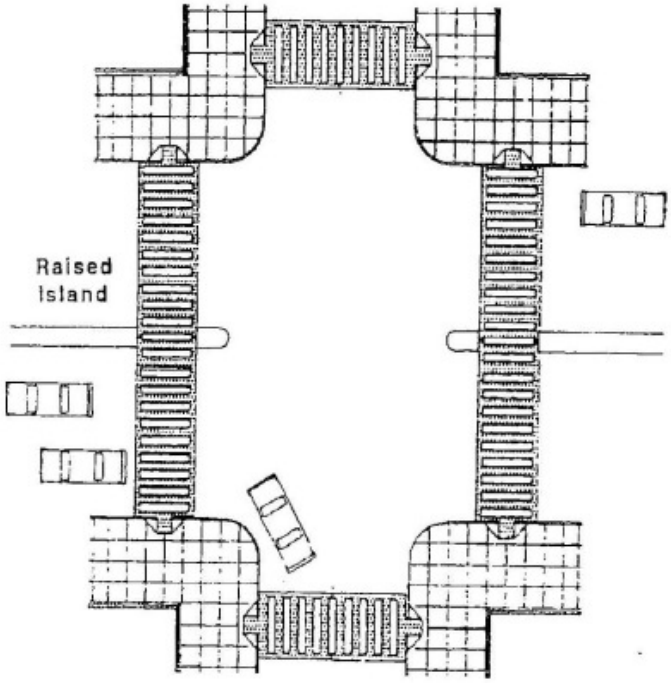
21.1 GENERAL

Whenever *sidewalks*, *walkways*, or curbs on streets and ways are *constructed*, *reconstructed*, or *repaired*, *curb cuts* are required. All *curb cuts* shall comply with the following:

21.2 LOCATION

Curb cuts shall occur wherever an *accessible route* crosses a curb and at the following locations:

21.2.1 *Curb cuts* are required at each corner of each intersection, located within the crosswalk and/or the pedestrian path of travel. *Curb cuts* shall be perpendicular to the curb at street crossings and each shall have a *level* landing at the top. At marked crossings, the bottom of the *ramp* run, exclusive of flared sides, shall be wholly contained with the marked crossing. **See Fig. 21a.** The crosswalk/pedestrian path of travel must also be perpendicular to the curb.



Curb Cuts at Intersection
Figure 21a

Exception: Where pedestrian right-of-way established width will not accommodate a perpendicular *curb cut* and landing, a parallel public *sidewalk curb cut* with a *level* landing at its bottom shall be provided instead of a perpendicular *curb cut*.

21.2.1.1 Apex *curb cuts*: Where site constraints prevent the installation of a perpendicular *curb cut* or a parallel *curb cut* with a level landing, an apex curb cut is allowed. Site constraints include the following:

21.00: **CURB CUTS**

a. Driver or pedestrian line of sight to or from the front of the level landing on the ramp is impaired, preventing safe observation of crosswalks or approaching traffic at the intersection by a significant immovable or unalterable streetscape feature such as a building, structure or historic element, etc.
b. Stop line is beyond the allowed limit as stated in the Manual on Uniform Traffic Control Devices.
c. Vaults containing electrical, telecommunications, etc. that are under or on the existing sidewalk.
d. Large radius intersections which are 30 feet or greater.

21.2.1.2 When apex *curb cuts* are installed a 48 inch (48" = 1219mm) landing shall also be provided at the bottom of the *curb cut* and located within the marked crosswalk.

21.2.2 Reciprocal *curb cuts*: When *curb cuts* or *sidewalks* are being *constructed* or *reconstructed* on one side of the street, and when such *curb cuts* or *sidewalks* are connected to an opposite side of the street by one or more pedestrian paths of travel, then at least one *curb cut* shall be provided on the opposite side of the street where such side is controlled by the same owner.

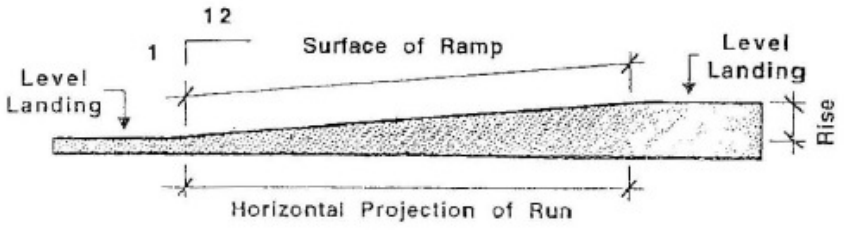
21.2.3 Driveways: *Curb cuts* are required at driveways intersecting *sidewalks* when the driveway has side curbs.

21.2.4 Raised Islands: Any raised islands in crossings shall be cut through *level* with the street or have *curb cuts* at both sides and a *level* area at least 48 inches (48" = 1219mm) long between the *curb cuts* in the part of the island intersected by the crossings.

21.2.5 Obstructions: *Curb cuts* shall be located or protected to prevent their obstruction by parked vehicles.

21.3 SLOPE

The least possible slope should be used for any ramp. The maximum slope shall be one-in-12 (1:12) (8.3%). Where *sidewalks* are too narrow to install a straight-line *curb cut* at a slope of one-in-12 (1:12) (8.3%), the sides of the *curb cut* shall not exceed one-in-12 (1:12) (8.3%). See **Fig. 21b**. The maximum cross-slope for any *curb cut* shall be 1:50 (2%). (There is no tolerance allowed on slope requirements). (Refer to 521 CMR 2.4.4d).



Slope
Figure 21b

21.00: **CURB CUTS**

21.4 TRANSITIONS

Transitions from *curb cuts* to *walks*, gutters, or streets shall be flush or free of changes in *level* greater than ½ inch (½" = 13mm). Maximum slopes of adjoining gutters, road surface immediately adjacent to the curb cuts, or accessible route shall not exceed one-in-20 (1:20) (5%).

21.5 DRAINAGE

Grading and drainage shall be designed to minimize pooling of water, accumulation of ice, or flow of water across the base of the *curb cut*.

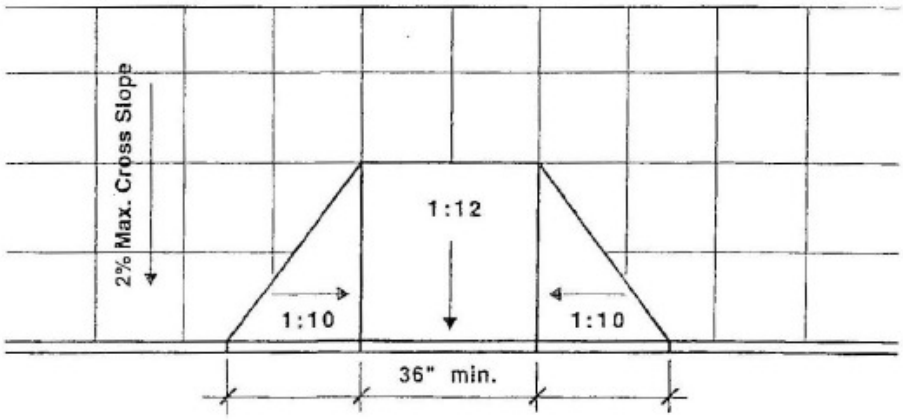
21.6 WIDTH

The minimum width of a *curb cut* shall be 36 inches (36" = 914mm), exclusive of flared sides. **See Fig. 21c.**

21.6.1 Landing width: Where a perpendicular *curb cut* is provided, a landing the width of the *curb cut* shall be provided at the top of the *curb cut*. The landing shall be 48 inches (48"= 1219mm) in length. The slope of said landing shall not exceed one-in-50 (1:50) (2%) in any direction.

21.7 FLARED SIDES

Sides of *curb cuts* shall extend at least 24 inches (24" = 610mm) at the curb. The maximum slope of the flare is one-in-ten (1:10) (10%). Curbing at the flared sides must blend with the slope of the flared sides. **See Fig. 21c.**

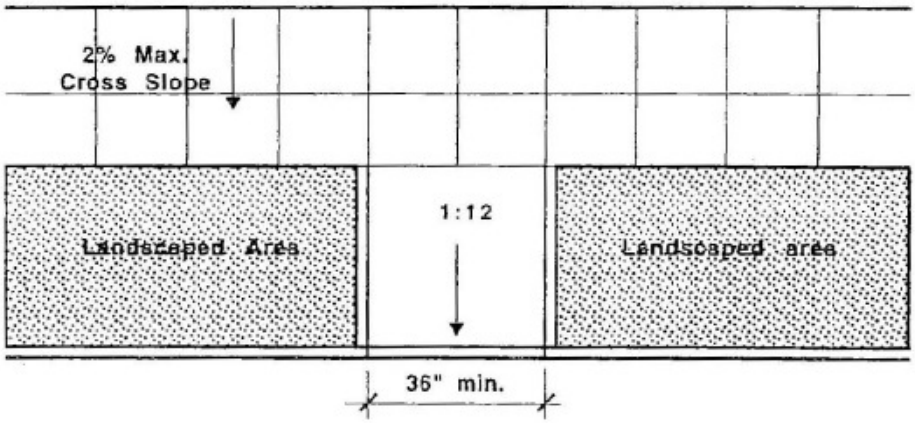


Curb Cut with Flared Sides
Figure 21c

21.8 RETURNED SIDES

Curb cuts with returned sides are only permitted where they are protected by handrails pursuant to **521 CMR 24.5, Handrails** or where pedestrian travel across the *ramp* is obstructed by permanently installed street hardware or landscaping. **See Fig. 21d.**

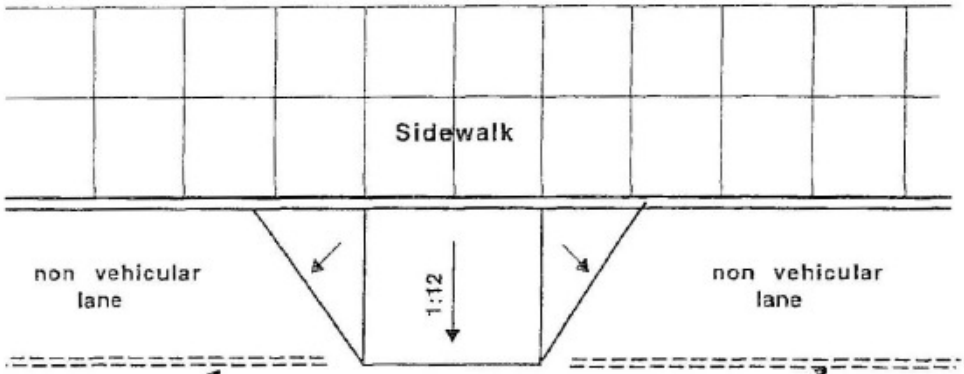
21.00: **CURB CUTS**



Curb Cut With Returned Sides
Figure 21d

21.9 **BUILT-UP CURB CUTS**

Built-up *curb cuts* are allowed only where they do not project into vehicular traffic lanes. **See Fig. 21e.**



Built up curb cut
Figure 21e

21.10 **PEDESTRIAN STREET CROSSINGS**

Where provided, pedestrian street crossings at, above, or below grade shall comply with the following:

.21.10.1 Crossing controls shall be raised from or flush with their housings and shall be a minimum of two inches (2" = 51mm) in the smallest dimension. The force required to activate controls shall be no greater than 5 lbs.

21.10.2 Location: Controls shall be located as close as practicable to the *curb cut* serving the controlled crossing and shall permit operation from a *clear* ground *space*.

21.00: **CURB CUTS**

21.10.3 Mounting Height: Pedestrian-actuated crossing controls shall be a maximum of 42 inches (42" = 1067mm) above the finished *sidewalk*.

21.10.4 *Clear* ground *space*: A stable and firm area, complying with **521 CMR 6.5, Forward Reach,** o **521 CMR 6.6, Side Reach** shall be provided at the controls. Where a parallel approach i provided, controls shall be within ten inches (10" = 254mm) horizontally of and centered on th *clear* ground *space*. Where a forward approach is provided, controls shall abut and be centere on the *clear* ground *space*.

21.11 **DETECTABLE WARNINGS** - Reserved until further notice.

21.12 **ACCESSIBLE PEDESTRIAN SIGNALS - Reserved**.

APPENDIX F:

520 CMR M.G.L. c. 82A

"Jackie's Law"

PART I. ADMINISTRATION OF THE GOVERNMENT

TITLE XIV. PUBLIC WAYS AND WORKS

CHAPTER 82A. EXCAVATION AND TRENCH SAFETY

Chapter 82A: Section 1. Unattended open trenches; safety hazards; rules and regulations; fines

Section 1. An excavator shall not leave an open trench unattended without first making reasonable effort to eliminate any recognized safety hazard that may exist as a result of leaving the open trench unattended. The commissioner of public safety, in conjunction with the director of labor and workforce development, or his designee, shall promulgate rules and regulations governing all construction related excavations and trench safety. The rules and regulations shall include, but not be limited to, a description of recognized safety hazards that may exist as a result of leaving open trenches or excavations unattended, a description of the procedures required or recommended by the department to eliminate safety hazards which may include covering, barricading or otherwise protecting open trenches from accidental entry, and a penalty structure for each violation of the proposed rules and regulations to be imposed by the department empowered with ensuring compliance with the rules and regulations. This penalty structure shall include the imposition of a fine for each violation of the regulations promulgated pursuant to this section. Any such fines collected by the department of public safety or the department of labor and workforce development shall be available for expenditure, without further appropriation, by those departments in an amount not to exceed $100,000 during each fiscal year for the sole purpose of providing construction safety training for licensed operators of hoisting equipment, police department officials, fire department officials and building officials. Those departments may also charge a reasonable fee to help defray the costs associated with said training. Any monies collected from the imposition of these fines in excess of $100,000 shall be transmitted monthly by those departments to the state treasurer who shall then deposit the excess funds into the General Fund. The department of public safety, in conjunction with the department of labor and workforce development, shall file a report detailing the amount of fines imposed, collected and expended pursuant to this section with the house and senate committees on ways and means and with the joint committee on public safety not later than August 15 of each year. The rules and regulations shall not be effective until the department of public safety has received a formal determination from the United States Secretary of Labor that the proposed rules or regulations do not seek to assume responsibility for development and enforcement therein of occupational safety and health standards relating to any occupational safety or health issue with respect to which a federal standard has already been promulgated under 29 U.S.C. section 667 or until the rules and regulations are approved by the United States Secretary of Labor as a state plan for the development of the standards and their enforcement pursuant to 29 U.S.C. section 667(c).

PART I. ADMINISTRATION OF THE GOVERNMENT

TITLE XIV. PUBLIC WAYS AND WORKS

CHAPTER 82A. EXCAVATION AND TRENCH SAFETY

Chapter 82A: Section 2. Trench excavating permits; permits issued by board or officer; certificate of insurance; fees

Section 2. Each city, town or public agency shall designate 1 board or officer to issue permits for the excavation of trenches on privately owned land and for the excavation of a public way of a city or town. The permits, when issued, shall include a summary of sections 40 to 40D, inclusive, of chapter 82 and a summary of regulations promulgated by the department of public safety relative to chapter 146. No person shall, except in an emergency, contract for the making of or make a trench, in any public way, public property, or privately owned land until a permit is obtained from the appropriately designated person within the city, town, or public agency that is authorized to issue the permit. The person shall notify the local permitting authority of the exact location of the trench. A person making application for a trench excavation permit shall produce a certificate of insurance with general liability coverage of $100,000 per person and $300,000 per claim or provide evidence of self-insurance in equal amounts. The local permitting authority may charge a reasonable fee to cover the administrative costs of the trench excavation permitting process incurred by the municipality in connection with the review and processing of the permits; but, a gas company, as defined in section 1 of chapter 164, or any corporation that is subject to the provisions of chapter 165, 166 or 166A which has already paid a fee in order to attain a permit to excavate a public way of a city or town shall not be responsible for paying an additional fee for the same excavation.

Chapter 82A: Section 3. Form of trench excavation permits; required statements

Section 3. A permit to excavate a trench issued pursuant to this chapter may be in any form authorized by the local permitting authority, but shall include the following statements:

(1) A trench shall not be excavated unless the requirements of sections 40 to 40D, inclusive, of chapter 82, and any accompanying regulations, have been met and this permit is invalid unless the requirements have been complied with by the excavator applying for the permit including, but not limited to, the establishment of a valid excavation number with the underground plant damage prevention system as provided in section 76D of chapter 164.

(2) Trenches may pose a significant health and safety hazard. Pursuant to section 1 of chapter 82, an excavator shall not leave any open trench unattended without first making reasonable efforts to eliminate any recognized safety hazard that may exist as a result of leaving the open trench unattended. Excavators should consult regulations promulgated by the department of public safety in order to familiarize themselves with the recognized safety hazards associated with excavations and open trenches and the procedures required or recommended by the department to eliminate safety hazards which may include covering, barricading or otherwise protecting open trenches from accidental entry.

(3) Persons engaging in any trenching operation shall familiarize themselves with the federal safety standards promulgated by the Occupational Safety and Health Administration on excavations: 29 CFR 1926.650 et. seq., entitled Subpart P “Excavations”.

(4) Excavators engaging in any trenching operation who utilize hoisting or other mechanical equipment subject to chapter 146 shall only employ individuals licensed to operate said equipment by the department of public safety pursuant to said chapter 146 and this permit shall be presented to the licensed operator before excavation is commenced.

(5) By applying for, accepting and signing this permit, the applicant hereby attests to the following: (i) that he has read and understands the regulations promulgated by the department of public safety with regard to construction related excavations and trench safety, (ii) that he has read and understands the federal safety standards promulgated by the Occupational Safety and Health Administration on excavations: 29 CFR 1926.650 et. seq., entitled Subpart P “Excavations”, and (iii) that he is aware of and has, with regard to the proposed trench excavation on private property or proposed excavation of a city or town public way that forms the basis of his permit application, complied with the requirements of sections 40 to 40D, inclusive, of chapter 82 and with the requirements set forth in this chapter.

(6) This permit shall be posted in plain view on the site of the trench.

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Chapter 82A: Section 4. Definitions

Section 4. For purposes of this chapter, a "trench" shall be defined as an excavation which is narrow in relation to its length, made below the surface ground in excess of 3 feet below grade and the depth of which is, in general, greater than the width, but the width of the trench, as measured at the bottom, is no greater than 15 feet and the words "excavator", "excavation" and "emergency" shall have the same meanings as defined in section 40 of chapter 82.

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Chapter 82A: Section 5. Additional requirements

Section 5. The requirements of this chapter are in addition to the requirements set forth in sections 40 to 40D, inclusive, of chapter 82 and not in lieu thereof.

Acknowledgments

By the authority of the City of Boston's Chief of Public Works and Transportation, Dennis Royer, and under the supervision of the Chief Engineer, Frank Dechellis and Chief Construction Inspector Mark Cardarelli, this manual was developed for application during street opening construction within the City of Boston's Right of Way.

The completion of this Manual has been a combined effort across Divisional and Departmental lines, between the Public Works Highway Division, Engineering Division, Permit Branch and the Boston Transportation Department with many individuals contributing time, energy and expertise.